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The Commonwealth of Massachusetts

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ANNUAL REPORT  
OF THE  
METROPOLITAN DISTRICT COMMISSION  
FOR THE YEAR 1939





# CONTENTS

|   | PAGE |
|---|------|
| I. Organization and Administration . . . . .  | 1    |
| Commission, Officers and Employees . . . . .  | 1    |
| II. General Financial Statement . . . . .   | 2    |
| III. Parks Division—Construction . . . . .  | 2    |
| Alewife Brook Parkway . . . . .   | 2    |
| Charles River Reservation . . . . .   | 2    |
| Hemlock Gorge Reservation . . . . .   | 3    |
| Lynn Shore Reservation . . . . .  | 3    |
| Middlesex Fells Reservation . . . . .   | 3    |
| Mystic Valley Parkway . . . . .   | 3    |
| Nantasket Beach Reservation . . . . .   | 3    |
| Old Colony Parkway . . . . .  | 3    |
| Quincy Shore Reservation . . . . .  | 3    |
| Revere Beach Parkway . . . . .  | 3    |
| Revere Beach Reservation . . . . .  | 3    |
| Veterans of Foreign Wars Parkway . . . . .  | 4    |
| West Roxbury Parkway . . . . .  | 4    |
| Winthrop Shore Reservation . . . . .  | 4    |
| Reconstruction of Parkways and Boulevards . . . . .   | 4    |
| IV. Maintenance of Parks and Reservations . . . . .   | 4    |
| Revere Beach Division . . . . .   | 4    |
| Middlesex Fells Division . . . . .  | 5    |
| Middlesex Fells Zoo . . . . .   | 7    |
| Charles River Lower Basin Division . . . . .  | 8    |
| Charles River Upper Division . . . . .  | 10   |
| Blue Hills Division . . . . .   | 11   |
| Nantasket Beach Division . . . . .  | 12   |
| Bath Houses . . . . .   | 14   |
| Golf Courses . . . . .  | 14   |
| Band Concerts . . . . .   | 15   |
| Civilian Conservation Corps . . . . .   | 15   |
| Works Progress Administration . . . . .   | 15   |
| W.P.A.—M.D.C. Recreation Project . . . . .  | 17   |
| V. Special Investigations . . . . .   | 18   |
| VI. Police Department . . . . .   | 18   |
| VII. Metropolitan Water District and Works . . . . .  | 21   |
| Construction . . . . .  | 21   |
| Reinforcing Southern High-service Pipe Lines . . . . .  | 21   |
| Maintenance . . . . .   | 22   |
| Precipitation and Yield of Watersheds . . . . .   | 22   |
| Storage Reservoirs . . . . .  | 22   |
| Wachusett Reservoir . . . . .   | 23   |
| Sudbury Reservoir . . . . .   | 24   |
| Framingham Reservoir, No. 3 . . . . .   | 24   |
| Ashland, Hopkinton and Whitehall Reservoirs and the South<br>Sudbury Pipe Lines and Pumping Station . . . . . | 25   |
| Framingham Reservoirs Nos. 1 and 2 and Farm Pond . . . . .  | 25   |
| Lake Cochituate . . . . .   | 26   |
| Aqueducts . . . . .   | 26   |
| Protection of the Water Supply . . . . .  | 27   |
| Clinton Sewage Disposal Works . . . . .   | 29   |
| Forestry . . . . .  | 30   |
| Hydro-Electric Service . . . . .  | 31   |
| Wachusett Dam Station . . . . .   | 31   |
| Sudbury Dam Station . . . . .   | 32   |
| Distribution Pumping Stations . . . . .   | 33   |
| Distribution Reservoirs . . . . .   | 34   |
| Distribution Pipe Lines and Storage Yards . . . . .   | 35   |
| Water Districts Supplied . . . . .  | 36   |
| Water from Metropolitan Water Works Sources Used Outside<br>of the Metropolitan Water District—1939 . . . . . | 38   |
| VIII. Metropolitan Sewerage Districts . . . . .   | 39   |

|   | PAGE |
|---|------|
| Areas and Populations . . . . .   | 39   |
| Metropolitan Sewers . . . . .   | 39   |
| Sewers Purchased and Constructed and Their Connections . . . . .  | 39   |
| Maintenance . . . . .   | 40   |
| Scope of Work and Force Employed . . . . .  | 40   |
| Deer Island Pumping Station . . . . .   | 40   |
| East Boston Pumping Station . . . . .   | 40   |
| Charlestown Pumping Station . . . . .   | 41   |
| Alewife Brook Pumping Station . . . . .   | 41   |
| Reading Pumping Station . . . . .   | 41   |
| North Sewer Lines . . . . .   | 41   |
| Ward Street Pumping Station . . . . .   | 41   |
| Ward Street Yard . . . . .  | 42   |
| West Street Yard, Hyde Park . . . . .   | 42   |
| Quincy Pumping Station . . . . .  | 42   |
| South Sewer Lines . . . . .   | 42   |
| Gasoline in Public Sewers . . . . .   | 42   |
| Pumping Stations . . . . .  | 43   |
| Capacities and Results . . . . .  | 43   |
| North Metropolitan System . . . . .   | 43   |
| South Metropolitan System . . . . .   | 44   |
| Metropolitan Sewerage Outfalls . . . . .  | 45   |
| Material Intercepted at the Screens . . . . .   | 45   |
| Construction . . . . .  | 46   |
| North Metropolitan System . . . . .   | 46   |
| North Metropolitan Relief Sewer . . . . .   | 46   |
| Siphon Under Chelsea Creek . . . . .  | 47   |
| Force Main Under Mystic River . . . . .   | 47   |
| Proposed Aberjona River Sewer . . . . .   | 47   |
| IX. Other Reports . . . . .   | 47   |
| Appendix No. 1. — Financial Statement . . . . .   | 48   |
| Construction . . . . .  | 48   |
| Parks Division . . . . .  | 48   |
| Sewerage Division . . . . .   | 50   |
| Water Division . . . . .  | 51   |
| Miscellaneous . . . . .   | 52   |
| Parks Division . . . . .  | 52   |
| Maintenance . . . . .   | 53   |
| Parks Division . . . . .  | 53   |
| Sewerage Division . . . . .   | 56   |
| Water Division . . . . .  | 56   |
| Receipts—Year Ended November 30, 1939 . . . . .   | 57   |
| Parks Division . . . . .  | 57   |
| Sewerage Division . . . . .   | 57   |
| Water Division . . . . .  | 57   |
| Appendix No. 2 — Data relating to Metropolitan Park System . . . . .  | 58   |
| Contracts relating to the Metropolitan Parks Division<br>made and pending during the year 1939 . . . . .  | 62   |
| Miscellaneous data relative to the development and<br>patronage of the Park and Recreational Facilities of<br>the Parks Division during the year 1939 . . . . .       | 64   |
| Appendix No. 3 — Statistics of the Police Department . . . . .  | 65   |
| Appendix No. 4 — Contracts relating to the Metropolitan Water Division<br>made and pending during the year 1939 . . . . .   | 68   |
| Special Orders made and pending during the year 1939 . . . . .  | 71   |
| Appendix No. 5 — Tables relating to the Metropolitan Water Division, in-<br>cluding rainfall, storage, consumption, analysis, etc.,<br>during the year 1939 . . . . . | 72   |
| Appendix No. 6 — Data relating to the Metropolitan Sewerage Districts<br>and Systems . . . . .  | 97   |
| Appendix No. 7 — Contracts relating to the Metropolitan Sewerage Division<br>made and pending during the year 1939 . . . . .  | 104  |



REPORT OF THE METROPOLITAN DISTRICT COMMISSION

TO THE HONORABLE THE SENATE AND HOUSE OF  
REPRESENTATIVES OF THE COMMONWEALTH OF  
MASSACHUSETTS IN GENERAL COURT ASSEMBLED

The Metropolitan District Commission has already presented to your Honorable Body an abstract of the account of the receipts, expenditures, disbursements and liabilities of the Metropolitan District Commission for the fiscal year ending on November 30, 1939, and now, in accordance with the provisions of section 100 of chapter 92 of the General Laws, as amended by section 7 of chapter 499 of the acts of 1939, presents a detailed statement of its doings for the calendar year ending on December 31, 1939.

TWENTIETH ANNUAL REPORT

I. Organization and Administration

COMMISSION, OFFICERS AND EMPLOYEES

Eugene C. Hultman was reappointed Commissioner for another term of five years by His Excellency, Governor Leverett Saltonstall, in December, 1939. The Commission thus remaining the same as in the previous year, with William F. Rogers, Melvin B. Breath, Austin J. O'Connor and Joseph McKenney, Associate Commissioners.

The Secretary of the Commission and the departmental Directors were unchanged during the year: namely, William E. Whittaker, Secretary of the Commission; Benjamin R. Davis, Director and Chief Engineer of Park Engineering; Joseph P. Dever, Director and Chief Engineer of the Water Division.

The total number of permanent positions as of November 30, 1939 and the number of temporary employees during the year is divided as follows:

|                     | <i>Adminis-<br/>tration</i> | <i>Parks<br/>Division</i> | <i>Sewerage<br/>Division</i> | <i>Water<br/>Division</i> | <i>Total</i> |
|---------------------|-----------------------------|---------------------------|------------------------------|---------------------------|--------------|
| Permanent . . . . . | 48                          | 670                       | 267*                         | 376***                    | 1361         |
| Temporary . . . . . | 28                          | 1218                      | 316**                        | 190                       | 1752         |
|                     | <hr/> 76                    | <hr/> 1888                | <hr/> 583                    | <hr/> 566                 | <hr/> 3113   |

\*Of this number 41 employees worked on Massachusetts State Project D-201, P.W.A. Docket 1419-F, Sewerage Division.  
Of this number 4 employees worked on Massachusetts State Project D-204, P.W.A. Docket 1574-F, Sewerage Division for part of the year.  
\*\*Of this number 45 employees worked on Massachusetts State Project D-201, P.W.A. Docket 1419-F, Sewerage Division for part of the year, and 5 employees worked on Massachusetts State Project D-204, P.W.A. Docket 1574-F, Sewerage Division for part of the year.  
\*\*\*Of this number 7 employees worked part time on Massachusetts State Project, D-203, P.W.A. Docket 1516-F, Water Division.

## II. General Financial Statement

*Year ending November 30, 1939*

|  |                 |
|--|-----------------|
| Expended for construction . . . . .                      | \$4,055,028.92* |
| Expended for maintenance . . . . .                       | 4,321,362.91**  |
| Total expenditures . . . . .                             | 8,376,391.83    |
| Unexpended balance, maintenance appropriations . . . . . | 611,146.09      |
| Sinking fund bonds paid . . . . .                        | 6,379,912.00    |
| Serial bonds and notes paid . . . . .                    | 571,937.50      |
| Decrease in sinking fund . . . . .                       | 4,835,860.98    |
| Increase in net debt . . . . .                           | 1,014,111.48    |

*On November 30, 1939*

|                    |                 |
|--------------------|-----------------|
| Net debt . . . . . | \$13,840,872.41 |
|--------------------|-----------------|

## III. Parks Division — Construction

During the year plans and specifications were prepared and construction supervised on the following works, performed by contract or by the maintenance forces of the various divisions:

### *Alewife Brook Parkway*

Repair work was started on the Alewife Brook Parkway bridge over the Boston and Maine Railroad (Central Massachusetts Branch) in Cambridge. Work will be completed in 1940.

### *Charles River Reservation*

The Cottage Farm Bridge Overpass and Traffic Circle at the junction of Memorial Drive and Cottage Farm Bridge, Cambridge, was dedicated by His Excellency, the Governor, Leverett Saltonstall, and opened to the public on November 29, 1939. All work was done under P.W.A. Docket No. Mass 1555-F, Massachusetts State Project No. D-210.

The Watertown Bathhouse on the Charles River on Pleasant Street, east of Green Street, was completed in the late spring and opened to the public on June 18, 1939.

The Boat House and Recreation Building at the lagoon between Exeter and Fairfield streets, Charles River Basin, Boston, was completed in the late fall and was very well patronized by persons skating on the lagoon rink.

The reconstruction of tennis courts at Riverside Recreation Grounds, Weston, was finished.

A four-inch cement lined cast-iron water pipe was furnished and laid in the Storrow Memorial Embankment, Boston, and bituminous concrete walks were constructed from Cottage Farm Bridge to Harvard Bridge, Boston. Work was done on the underground public sanitary on the Embankment, Boston.

The Lechmere Canal and Broad Canal, Cambridge, are being dredged and work will be completed in 1940.

A dam and gate are being installed in the small boat lock at the Charles River Dam, Cambridge, and four of the sluice gates and the machinery are being repaired. Repairs are being made to the granite block pavement at the approaches to the drawbridge at the dam.

- \* Of this amount \$439.92 is for Massachusetts State Project D-1, Wellington Bridge.
- \$88,523.67 is for Massachusetts State Project D-206, Docket 1512-F, Metropolitan Parks Construction Fund, Boulevards, Special, Underpass at Columbia Circle.
- \$89,186.86 is for Massachusetts State Project D-207, Docket 1510-F, Traffic Circle at West Roxbury Parkway and Centre Street.
- \$394,100.34 is for Massachusetts State Project D-210, Docket 1555-F, Overpass and Traffic Circle, Cottage Farm Bridge.
- \$3,831.73 is for Metropolitan Sewerage Construction Fund, North System, Massachusetts State Project D-101, Docket 1098-R.
- \$2,072,684.84 is for Massachusetts State Project D-201, Docket 1419-F.
- \$306,167.74 is for Siphon Chelsea Creek, Massachusetts State Project D-204, Docket 1574-F.
- \$248,957.88 is for Massachusetts State Project D-203, Docket 1516-F, Metropolitan Water Construction Fund, Improvements, Supply Mains.

\*\*Of this amount \$42,571.35 is for Massachusetts State Project D-209, Docket 1585-F, Metropolitan Parks Fund, Boulevards, Resurfacing Boulevards and Parkways, Traffic Circle on Revere Beach Parkway.

The cables on the Larz Anderson Bridge, Boston and Cambridge, were replaced and the lighting ducts drained.

Repairs were made to the roof, gutters and down spouts of the Lower Basin Division garage, boat house and shelters, Boston and Cambridge.

#### *Hemlock Gorge Reservation*

The circular dam was pointed and the masonry was repaired in the east sluiceway at Hemlock Gorge Reservation, Newton Upper Falls, Newton and Wellesley.

#### *Lynn Shore Reservation*

The seawall on Lynn Shore Reservation from Wave Street to Monument Square, Lynn and Swampscott, was repaired.

#### *Middlesex Fells Reservation*

Drainage work was performed in the Fellsway East Extension, Stoneham.

#### *Mystic Valley Parkway*

A drain was constructed on the Mystic Valley Parkway, near the Aberjona River, Winchester, and the decking and wearing surface of the Aberjona Bridge was repaired.

Drainage improvements were made and a tide gate was installed on the Mystic Valley Parkway, Medford.

A part of Upper Mystic Lake, Winchester was dredged and incidental work was performed.

#### *Nantasket Beach Reservation*

Approximately one hundred and ninety linear feet of storm-damaged seawall at Nantasket Beach Reservation, Hull, was demolished. A reinforced concrete pipe is being installed to replace a damaged section of sewer. This job will be completed in 1940.

#### *Old Colony Parkway*

A by-pass and traffic circle were constructed on Old Colony Parkway at Mount Vernon Street and Columbia Circle, Dorchester. Incidental work included the reconstruction of a storm sewer overflow. All work was done under P.W.A. Docket No. Mass. 1512-F, Massachusetts State Project No. D-206.

The concrete draw piers and struts across the ship channel, and the fender piers of the Neponset Bridge, Boston and Quincy, were repaired. The draw and drawtender's house was painted.

#### *Quincy Shore Reservation*

Albino asphalt traffic lane markers were installed in Quincy Shore Drive, Quincy, from Black Creek Bridge approximately one thousand feet northerly. The iron fence and sidewalk at Atlantic Bridge over the New York, New Haven and Hartford Railroad, Quincy, were repaired.

#### *Revere Beach Parkway*

A traffic circle was constructed at the intersection of Revere Beach Parkway, Garfield Avenue and Webster Avenue, Chelsea. The northwesterly approach to the traffic circle was reconstructed. All the work was done under P.W.A. Docket No. Mass. 1585-F.

Miscellaneous wood and steel repairs were made to the Malden River Bridge, Medford and Everett under Massachusetts State Project No. D-209.

#### *Revere Beach Reservation*

The new sanitary building on Revere Beach Reservation at Shirley Avenue, Revere, was completed.

Granite repairs were made to the cupola on the Revere Beach Bathhouse.



### *Veterans of Foreign Wars Parkway*

The drainage system south of Baker Street on Veterans of Foreign Wars Parkway, West Roxbury, was reconstructed.

### *West Roxbury Parkway*

A traffic circle was constructed at West Roxbury Parkway and Centre Street, West Roxbury. The work was performed under P. W. A. Docket No. Mass. 1510-F, Massachusetts State Project No. D-207.

### *Winthrop Shore Reservation*

A new sanitary building was constructed on Winthrop Shore Reservation at Mermaid Avenue, Winthrop.

The seawall and roadway between Neptune Avenue and Trident Avenue, Winthrop, which were damaged by storm, were repaired.

## RECONSTRUCTION OF PARKWAYS AND BOULEVARDS

The following boulevards and parkways were reconstructed or resurfaced during the year, with some improvements in grade and alignment:

The southerly side of Memorial Drive, Cambridge, from Massachusetts Avenue, 3700 feet easterly, was resurfaced.

Memorial Drive was reconstructed from Boylston Street to Western Avenue, Cambridge.

North Beacon Street from Leo M. Birmingham Parkway, 1900 feet northwesterly, Boston and Watertown, is being resurfaced; work will be completed in 1940.

Mystic Valley Parkway was reconstructed from the culvert to High Street, Arlington.

A portion of the Neponset Traffic Circle, Old Colony Parkway, Dorchester, was resurfaced.

Quannapowitt Parkway was resurfaced from Lowell Street to North Avenue, Wakefield.

Woburn Parkway from Pleasant Street to Water Street, Woburn, was resurfaced.

One hundred and ninety-nine permits were issued for driveway entrances and necessary purposes, and fifty-two orders concerning restrictions were issued and reported upon.

The Park Engineering Division furnished the supervision for all driveway construction work and all other work relating to permits. It reported to the Commission all building operations where violations of restrictions were involved.

During the winter months, ice breaking was performed in the channels of the Charles River Basin below Longfellow Bridge and in the Broad and Lechmere Canals, as required by the Federal Government.

## IV. Maintenance of Parks and Reservations

### REVERE BEACH DIVISION

Again bearing out the contention that the bathing beaches in the Revere area are among the safest in the world, there were no drownings during the 1939 bathing season at Swampscott, Lynn, Nahant, Revere and Winthrop beaches. This record was achieved even with an attendance of more than twenty million persons. This large number was partially a result of reports made by the State Department of Public Health that the water at these beaches was not polluted, but that there was pollution at many public bathing places around Boston.



*Revere Beach Reservation:*

In addition to the usual care of all park structures, roads, walks, beaches, etc., the following work was performed: 200 linear feet of 8-inch sewer pipe, 200 linear feet of water pipe and 400 linear feet of conduit pipe for Gamewell system and electric service, were laid and three manholes were constructed at the new Shirley Avenue sanitary. The old sanitary was demolished. The seawall was back-filled from Revere Street to Point of Pines. 2400 square yards of Type "I" bituminous concrete walks were constructed. Eighteen Linden trees were planted. To eliminate a dangerous fire menace, obsolete and defective wiring was replaced in the bathhouse. Extensive plumbing repairs were made at the Chester Avenue sanitariums.

*Revere Beach Parkway:*

The parkway was maintained and additional work performed as follows: 325 concrete guard posts were erected, 4500 linear feet of obsolete and disused fencing and posts were removed, and 373 shade trees, 160 evergreens and 4194 shrubs were planted. Four acres of grass area was regraded, loamed, fertilized and seeded. 110 square yards of Type "I" bituminous concrete walk was constructed and 580 linear feet of granite curbing was installed.

*Lynnway:*

In addition to regular maintenance, a new skating rink was built, 14 maple trees were planted and 5 new Sodium lights were installed.

*Lynn Shore Reservation:*

Regular maintenance work was performed, and in addition, two drinking fountains and leeching basins were installed at Red Rock Park; 86 shade trees, 220 evergreens, 240 shrubs, 400 bulbs and 505 flowers were planted and cared for.

*Nahant Beach Parkway:*

The parkway, beach and bathhouse were maintained, a concrete ramp and floor was laid and an overhead-type door was installed at the storage building; extensive repairs were made to the plumbing and drainage system at the Refectory Building, including the construction of a large manhole on the sewer line.

*Winthrop Parkway:*

All regular maintenance work was performed, a sewer manhole was rebuilt, 80 feet of surface drain was laid and 13 maple trees and 150 shrubs were planted.

*Winthrop Shore Reservation:*

In addition to normal maintenance, the old substation was demolished, a new sewer manhole was constructed at the new sanitary, and heavy tidal deposits of sand and stone were removed after several severe northeast storms.

### MIDDLESEX FELS DIVISION

All roads, bridle paths, recreation grounds and parking spaces were maintained. 355,323 board feet of lumber from the logs salvaged from trees felled by the hurricane was sawed by contract. Of this quantity, 3,344 board feet was sent to the Lower Basin division, 12,410 board feet to the Revere Beach Division, 6,000 board feet to be used on W.P.A. projects and 15,000 board feet was used by the Middlesex Fells Division. The remaining lumber is piled according to variety and size and is to be used as needed by the divisions. For finishing this lumber, a new thickness planer was installed in the carpenter

shop. Even the shavings produced are used in the zoo and by the Forestry Department to be used instead of burning oil.

A new power cable was laid underground to the carpenter shop and all the lighting circuits in the garage buildings and shops were rewired.

From the reservation nursery, 250 trees, 310 evergreens, 1500 shrubs and vines and 1740 plants were sent to other divisions for roadside and reservation planting. A large quantity of lilacs and spruce from the Weston Nurseries, which was taken by the Metropolitan District Water Supply Commission, were transplanted into the nursery. 5,000 hemlocks, 10,000 white pines, 10,000 red pines and 5,000 spruce were planted in this division during the year.

#### *Breakheart Reservation:*

The care of this reservation is still under the C.C.C. All necessary maintenance work was performed and the C.C.C. was furnished supplies and equipment as needed. The entire main roadway and parking spaces were sealcoat treated.

#### *Mystic River Reservation:*

The bathing beach at Foster's Court was again closed by orders from the State Department of Public Health. All other parts of the reservation were given proper maintenance care. Alewife Brook Parkway, Lynn Fells Parkway, Middlesex Fells Parkway, Middlesex Fells Roads, Mystic Valley Parkway, Quannapowitt Parkway.

#### *Woburn Parkway:*

Fences were repaired and painted; culverts and cross drains were repaired and kept in good condition; catch basins and gutters were cleaned; traffic lines, cross-walks and warning signs were painted on roads where needed. Grass areas and planting strips were cut and raked; catch-basins and gutters were kept clean; culverts and cross drains were cleaned and repaired. Roadways and sidewalks were kept in good repair, snow was plowed and removed and sanding done when needed. Many trees were planted as replacements for trees felled or damaged by the hurricane.

One hundred Stimsonite road markers were installed along the shoulders of the Jerry Jingle section of Fellsway East and a sodium light was installed at the junction of Fellsway East and Ravine Road.

#### *Forestry:*

The work of this department during the past year has been, except for gypsy moth work, entirely or indirectly connected with hurricane clearance. The majority of the regular employees of the department were, for the greater part of the year, acting in various capacities, as foremen, chauffeurs, instructors, etc., in connection with the W.P.A. Insect Pest Control and Hurricane Clearance projects and on the divisions' Special Hurricane Appropriation.

In cleaning up after the hurricane, a maximum number of one hundred men were employed, sixteen of whom were tree climbers. This crew removed all dangerous trees and limbs from all the reservations, boulevards and roads, and from all wooded areas in the Mystic Valley Reservation and the area surrounding Little Spy Pond in Belmont. Within the Middlesex Fells Reservation, the Whip Hill, Virginia Woods, High Service, Hemlock Pool, areas in the Lawrence Woods, East Dam, Middle Roads and Nanapashamet areas were also cleared. Dangerous trees and broken limbs were removed from over or adjacent to all principal bridle paths in the reservation.

The division had a larger number of fires during the past year than for several seasons previous. However, the acreage burned and the damage caused has been comparatively small and the number of fires low, considering the large number of men employed in the wooded areas, the extreme dryness, prevailing high winds and other extra fire hazards which existed all during the spring, summer and fall.



About 30,000 small evergreens, spruce, white pine, red pine and hemlock were planted in various denuded areas within the reservation. This type of work can be increased and will be much more effective when the hurricane damage is cleared up.

During the spraying season, one sprayer unit was loaned, and creosote, brushes and other equipment were furnished to the C.C.C. workers at Breakheart Reservation.

The insect pest conditions in the Middlesex Fells Reservation were much improved this year over the past two seasons, and it is gratifying to report a substantial decrease in all pests, especially the gypsy moth. Twenty tons of arsenate of lead, fifteen barrels of creosote, fifteen barrels of fish oil, five barrels of dormant spray oil and seven sprayer units of three hundred to six hundred gallon capacity were used in insect pest control work.

### MIDDLESEX FELLS ZOO

The Zoo, located on Pond Street, Stoneham, on the northerly side of Spot Pond in the Middlesex Fells Reservation, continues to be one of the chief attractions in the entire Metropolitan Park system. The inventory of all animals, birds and reptiles at the end of the year, and a record of births, deaths, gifts, etc., follows:

#### *Animals:*

3 African Lions, 4 Jaguars, 3 Mountain Lions, 2 Bay Lynx, 1 Hyena, 2 Lobo Wolves, 3 Black Bears, 12 Raccoons, 9 Red Fox, 1 Arctic Fox, 1 Gray Fox, 1 Silver Fox, 1 Mink Badger, 2 Skunk, 2 Porcupine, 3 Woodchucks, 1 Black Squirrel, 12 Gray Squirrels, 10 Rabbits, 30 Guinea Pigs, 12 White Rats, 10 White Mice, 5 Elk, 1 Buffalo, 4 Siki Deer, 6 Fallow Deer, 2 Llamas, 3 Tahr, 2 Aoudads, 2 Texas Steer, 3 Peccaries, 12 Goats, 10 Sheep, 2 Ponies, 1 Green Monkey, 4 Rhesus Monkeys, 1 Ring-tailed Monkey, 1 Mangaby Monkey, 2 Kinkajou, 2 Coaiti Mundi.

#### *Birds:*

3 Black Throated Golden Pheasants, 10 Amherst Pheasants, 3 Formosan Pheasants, 5 Silver Pheasants, 6 Chinese Pheasants, 2 Manchurian Pheasants, 4 White Pheasants, 2 Nepal Pheasants, 5 Reeves Pheasants, 3 Swinehoe Pheasants, 10 Golden Pheasants, 2 Purple Guinea Fowl, 1 Lavender Guinea Fowl, 4 Chucas Partridge, 8 Bob White Quail, 4 California Valley Quail, 1 Emu, 6 Black Shoulder Peafowl, 6 Blue Pea Fowl, 2 Demoiselle Cranes, 2 Golden Crown Cranes, 1 Golden Eagle, 4 Great Horned Owls, 4 Sparrow Hawks, 1 Sulphur Cockatoo, 1 Blue Macaw, 2 Red Macaws, 1 African Parrot, 4 Mexican Yellow Head Parrots, 2 Mexican Double Yellow Head Parrots, 80 Pigeons, 10 Canaries.

#### *Waterfowl:*

3 Swans, 2 Blue Geese, 3 Snow Geese, 2 White Fronted Geese, 3 Sebastapool Geese, 3 Canada Geese, 2 Pilgrim Geese, 1 African Goose, 3 Toulouse Geese, 4 Emden Geese, 3 Sea Gulls, 8 Black Ducks, 10 Wood Ducks, 4 Mandarin Ducks, 5 Red Head Ducks, 1 Gadwall Duck, 2 Rosy-billed Ducks, 4 Pintail Ducks, 4 Buff-crested Ducks, 4 White-crested Ducks, 20 Mallard Ducks, 4 Rouen Ducks, 16 Pekin Ducks, 10 Indian Runner Ducks, 36 Muscovy Ducks, 10 Common White Ducks.

#### *Died or Put to Death:*

2 Young Lions, 1 Old Bear, 3 Kid Goats, 2 Jaguars, 1 Wildcat, 1 Golden Eagle, 1 Bald Eagle, 1 Old Coyote, 6 Wolf Pups, 1 Green Monkey, 1 Badger, 1 Old Lion, 1 Cow Elk, 2 Parrots, 1 Young Tahr.

*Received as Gifts:*

7 Raccoons, 1 Coaiti Mundi, 1 Cow Elk, 2 Mountain Lions, 2 Fallow Deer, 1 Moss Monkey, 1 Silver Fox, 1 Red Fox, 1 Gray Fox, 4 Parrots, 9 Pheasants, 2 Geese, 20 Mallard Ducks, 40 Goldfish, 12 Rabbits, 6 Guinea Pigs, 1 Black Squirrel.

2 Badgers for 1 Wolf Pup, 1 Hyena for 2 Fallow Deer, 1 Black Bear for 1 Peccary, 1 Snow Goose for 1 Pea Hen, 1 Velvet Monkey for 1 Wildcat, 1 Emu for 4 Wood Ducks, 2 Mountain Lion Cubs, 3 Peafowl, 2 Golden Cranes for 3 Sheep, 4 Wood Ducks, 6 Mallard Ducks, 6 Muscovy Ducks, 1 African Lion for 1 Mountain Lion.

*Born at Zoo:*

5 Lambs, 12 Goats, 6 Wolves, 2 Mountain Lions, 1 Fallow Deer, 1 Siki Deer, 1 Elk, 3 Jaguars, 30 Ducks, 20 Pheasants, 12 Peafowl, 10 Wood Ducks, 3 Red-head Ducks, 1 Tahr.

*Given Away:*

2 Lambs, 2 Gid Goats, 1 Fitch, 1 Opossum, 1 Lion Cub, 2 Raccoons.

## CHARLES RIVER LOWER BASIN DIVISION

The usual maintenance work was carried on in all sections of the reservations. This included snow plowing and shovelling, sanding; cleaning of rip-rap and river banks, repairing riprap; cleaning and repairing catchbasins; sweeping streets, sidewalks and gutters. All trees and shrubs in the reservation were sprayed several times, shrubs beds were cared for, and grass cut weekly. The comfort stations, bathhouse, ballgrounds, tennis courts and auto parks were kept in repair and maintained. Road repairs were made and traffic lines were painted several times. More than two hundred signs were made, painted and set up. Trucks and patrol cars were maintained and serviced at the Basin garage and police boats and life boats were maintained, painted and reconditioned at the boathouse.

*Bunker Hill Reservation:*

The new banking on the High School side was regraded and seeded. All the gravel walks were resurfaced, the banks adjacent to the steps were resodded and the drains in that section were relaid. All settees on the grounds were repainted, the iron fence around the grounds and the fence around the Monument were red-leaded and painted. All doors and window frames in the Monument and Lodge Building were repaired and repainted and glass was replaced where necessary.

At the Lodge Building, the plumbing system was completely replaced. This work included the installation of new toilets, lavatories, sink and the hot water supply was connected to the oil burner heater. The woodwork in the basement was repainted and new display shelves were erected in the concession booth.

*Storrow Memorial Embankment and Charles River Basin:*

Three new bronze markers were erected on the Embankment near Longfellow Bridge, near Chestnut Street and near the Harvard Bridge, designating it the "Storrow Memorial Embankment."

Before the summer concert season, the Music Shell was rewired for electricity, a ten-foot extension with steps was built at the front of the platform and the interior of the shell was painted. It was estimated that 300,000 persons attended the 27 scheduled concerts given under the direction of Arthur Fiedler by a group of players from the Boston Symphony Orchestra. Immediately after the close of the concert season, the shell was dismantled to make room for its replacement with a marble structure to be erected by the



Hatch Memorial Fund and to be known as the "Maria E. Hatch Memorial Concertorium." About 3,000 shrubs in this area were removed and replanted in other locations on the Embankment and at the Dam. A new police cable was laid around the site of the Concertorium, and also from Fairfield Street to the new recreation building.

The new recreation building between Fairfield and Exeter streets was completed in October and made available for the long ice-skating season. Division forces built a counter and facilities for checking clothes, and installed runways for the use of skaters.

Nearly all plumbing at the Tea House was renewed, a new stack heater was installed and a concrete floor was laid in the kitchen.

In September the Commission granted permission to the Lotta Crabtree Estate to erect a Memorial, in the form of a monumental drinking fountain for humans and dogs, on the Storrow Memorial Embankment. Incidental to work on this Memorial, the division's labor forces relocated a section of water pipe to the sanitary, installed two new 4-inch surface drains, and constructed a catch basin.

The roof of the Embankment sanitary was waterproofed, new ventilators were installed and some waterproofing work was done on the side walls.

Considerable extra work was done in conjunction with the running of the outboard motor races in the summer and the Santason Parade at Thanksgiving.

About 5,000 square yards of broken and cracked walks in the park at the Dam were replaced and the electric lighting system in the station was replaced.

Considerable work was done cleaning up hurricane damage and more than 800 new shrubs and trees were planted, many as replacements.

As a result of an analysis of the river water which showed a high bacterial count, all the bathing beaches, including those in the Upper Division and those controlled by the cities and towns between Galen Street in Watertown and the Charles River Dam, were sprayed with industrial Hypochlorite as often as necessary to keep down pollution. Life-saving apparatus along the whole river was kept in good repair and many cabinets were made and set up for the protection of life preservers in exposed locations.

#### *Cambridge Parkway and Memorial Drive:*

During the construction of the Overpass and Traffic Circle on Memorial Drive at Cottage Farm Bridge, all temporary roadways were maintained and oiled by the division's labor force. Temporary route signs were set up during construction and permanent signs were erected after construction. Thirty large maple trees were removed from the area and replanted at the Magazine Beach parking area. Temporary cables were laid for the Gamewell police signal system, permanent cables being laid by the contractor just prior to the completion of his work.

#### *Magazine Beach:*

The beach was covered with fresh sand, all dangerous holes in the swimming area were filled and the area was roped off and a float provided for the swimmers.

A new counter and "valuables" locker were built at the bathhouse. The concession stand was removed. The comfort station was painted inside and out and the roof was repaired.

Fill material was spread on the ballgrounds.

#### *Fresh Pond Parkway and Gerry's Landing:*

A new layer of sand was placed on the beach and dangerous holes in the swimming area were filled in. The lawn area in the rear of the Cambridge Hospital was extended by clearing back and loaming and seeding. In the Lowell Park, the whole area was loamed and rolled and the boundary fence was repaired. A pea stone and oil-penetrated roadway was constructed from Mt. Auburn Street to the Browne and Nichols gate.

## CHARLES RIVER UPPER DIVISION

*Charles River Reservation:*

During the winter season, roads and walks were kept clear of snow and sanded when required. Gutters and catch basins were kept open, roads were patched and kept in repair and traffic lines were painted four times during the year. Fences and signs kept in repair and painted and all buildings on the reservation were repaired and painted where needed. River floats were repaired and renewed where required and life-saving stands were kept in repair and replacements made. Trees were pruned and sprayed, grass underbrush and weeds were cut and cleaned up, gypsy moth nests were creosoted.

The Speedway driving track was maintained and well attended matinees and horse shows were conducted by the Metropolitan Driving Club during the winter, spring and fall. The club started construction of a club house on land of the Commission at the back of the track and adjacent to the dike road along the river. Trenches were dug from Soldiers Field Road to the dike road for water, telephone and electric service. About one quarter mile of fence along the track was relocated to make room for the club house.

A parcel of land was taken adjacent to the Speedway Headquarters, and work was started on the construction of a new garage building. The surface of Forest Grove Bridge was replanked.

A double fireplace was built at Fox Island, Waltham and three fireplaces were built between Soldiers Field Road and the river. The dike along the playground opposite Speedway Headquarters was removed to give a clearer view of the river.

One hundred temporary employees were engaged in repair and clean-up of hurricane damage. In the whole division, about 4,940 felled or damaged trees were removed and approximately 1,250 acres of park land was worked over. From the trees removed, 80,003 board feet of hardwood and 88,123 board feet of soft wood were sawed and 168 cords of wood were cut. 445 trees, 313 evergreens and 1,255 shrubs were planted as replacements.

The refreshment stand and starter's booth at the Riverside Golf Course, which was damaged by the hurricane, was replaced by a new building annexed to the Club House. The flag pole at Riverside Headquarters, which had been blown down, was replaced.

*Beaver Brook Reservation:*

In addition to the regular care of the Waverly Oaks, grounds and buildings, the following work was performed: The dikes of the upper and lower ponds were repaired and some flashing replaced. A new back stop was installed at the baseball diamond, a toboggan slide was erected at the picnic grounds and the grand stand at the ball field was repaired. Grass areas were loamed and reseeded.

*Hammond Pond Parkway:*

The parkway was plowed and sanded in winter and traffic lines and signs were painted. Grass, underbrush and weeds were cut and cleaned up, gypsy moth nests were creosoted, trees pruned and sprayed, ditches kept clear.

A foot-bridge approximately 190 feet long and 7½ feet wide, was built over a marshy section of the parkway. A section of walk about 500 feet long and 4 feet wide was rebuilt along Hammond Pond. A walk, 800 feet long by 4 feet wide, was constructed as an extension from the end of the W.P.A. sidewalk. One new fire place was built.

*Riverside Public Golf Course:*

Regular care and maintenance was given to the grounds and buildings. At No. 12 fairway, an area of 10,000 square feet was drained, graded, loamed and seeded. Seven of the other fairways were re-loamed, graded, fertilized and



seeded. Five new tees were constructed. Fairway No. 3 was widened 30 feet for approximately 800 feet. Ten additional outlets were installed in the fairway irrigation system and velvet, bent sod was inserted in 10 greens. Fir and hemlock trees were set out along the course.

#### *Riverside Recreation Grounds:*

Grass, underbrush and weeds were cut and cleared up, shrubbery beds were cared for, fences and signs were repaired and painted, buildings were kept in repair, the ball field and track was maintained and the pool was drained, cleaned and refilled when necessary.

A new retaining wall 500 feet long and 7 feet high was built around the outdoor pool. A boat landing, 150 feet long by 12 feet wide, was constructed on pilings. Pilings and beams were renewed under buildings and float. Five new tennis courts were constructed and enclosed with a 9-foot wire fence.

### BLUE HILLS DIVISION

#### *Blue Hills Reservation:*

In addition to the regular divisional work, such as the upkeep of bridle paths, roads, buildings, grounds, trees, shrubs, plants, sidewalks, catch-basins, rolling stock, etc., the following new work was done:

Five miles of bridge trails in the James Estate area were reconstructed; 150,000 pine, spruce and hemlock seedlings were set out in various sections of the reservation; 79,000 pine, spruce and hemlock seedlings were received from Amherst and Bridgewater State Nurseries and planted in the two reservation nurseries. 465 shrubs and trees received from the Weston Nursery were also set out in the nursery near headquarters. 245 trees were planted along the various roads as hurricane replacements.

320 feet of stone masonry wall was constructed along General Samuel Parker's property in exchange for land needed for a sidewalk on Blue Hill River Road.

Traffic lines throughout the division were painted at least twice during the year. This work totalled 85 miles and 850 gallons of road paint and 35 gallons of gasoline were used. 450 gallons of creosote stain were applied to rustic guard-rail fences. All roadways and forest sections threatened by moth infestation were sprayed, using 16 tons of arsenate of lead and 500 gallons of fish oil. Directional and traffic signs were painted and renewed and many new ones installed. All fences and buildings damaged by the hurricane were repaired and all regular building repairs were made.

From hurricane-felled trees, 345,000 board feet of logs were delivered to the New England Timber Salvage Administration yards in Dedham, and 150,000 board feet were sawed for divisional use.

100 linear feet of 24-in. cement pipe was installed and about one-half-acre of land was reclaimed near Marigold Brook leading to Hoosicwhisick Pond. Eight new fire places, tables and benches were constructed in various locations in the reservation.

#### *Neponset River Reservation:*

In addition to the regular care of the reservation, about 75 hurricane-felled and damaged trees were removed.

#### *Quincy Shore Reservation:*

The reservation was given regular maintenance and other work was performed as follows: 25 old and decayed poplars between Atlantic Bridge and Squantum Street were removed and replacements planted. 250 linear feet of 15-inch pipe was installed to remove storm water from private property on Ditmar and Squantum streets. Four new shelters were erected on the beach side of the drive. Work was done at Moswetuset Hummock off Squantum Street.

*Stony Brook Reservation:*

Extra work was done in the reservation as follows: 100 trees were planted along the various roads as hurricane replacements; 25,000 small pine and spruce trees were planted; two new fire places, tables and benches were built, and a seal coat was applied to Smith Field and Bold Knob Roads.

*Blue Hills Parkway:*

The parkway was given regular maintenance. 25 American Elm trees were planted as replacements. Two unnecessary cross-overs between Canton Avenue and Popes Icehouse were closed and the areas improved. 720 trees were pruned.

*Dedham Parkway:*

In addition to the regular care of this parkway, a seal coat was applied over the entire length of the roadway.

*Furnace Brook Parkway:*

In addition to regular maintenance, 600 linear feet of sidewalk, north of Adams Street, was improved, and 26 trees destroyed by the hurricane were replaced.

*Neponset Valley Parkway:*

The parkway was maintained and 20 trees were planted as replacements.

*Old Colony Parkway:*

All regular maintenance work was performed, 76 trees were planted, a dry well was constructed to take overflow water from the Malibu Beach shower baths and the entire traffic light system was replaced.

*Turtle Pond Parkway:*

The parkway was given usual care and maintenance and 55 trees were planted as hurricane replacements.

*Veterans of Foreign Wars Parkway:*

In addition to the care and maintenance of the parkway, water mains and telephone and electric conduits were laid a distance of 1200 feet from Spring Street to the sub-station; 150 trees were planted and 4,200 cubic yards of sand were spread on the Spring Street beach.

*West Roxbury Parkway:*

The usual care was given to the roadways, grass plots, sidewalks, trees, shrubs, etc. In addition, 114 trees were planted as replacements. A seal coat was applied to the overlook road and concrete steps were constructed from the road to the tower. A bituminous concrete walk, one thousand feet long, was constructed from Pelton Street to Anawan Avenue and seal coat was applied to both East and West Border Roads.

### NANTASKET BEACH DIVISION

The street, catch basins, beach and piazzas were kept clean. Lawns, shrubbery, sanitariums, buildings, automobiles, etc., were cared for. All fire hose and extinguishers were tested and conditioned. Snow fences were erected and taken down and snow was plowed and removed. Filling was hauled from the beach and placed in back of the seawall. Parking yards were oiled, sanded and maintained and an area of 6,000 square feet was graded. 190 linear feet of seawall was constructed and the stairs at Water Street were extended. 30 linear feet of retaining wall was built at the end of the north parking yard. Beach chair houses, storm porches and shutters on dormitory, station, captain's house, bath-



house and pavilion, and stairs to the beach, were erected and removed in season. 286 linear feet of fence was erected on the seawall. Wooden settees, band stand, beach chair houses, life guard stands, life boats, new seawall fence, incinerator, signs, street lines and markers, street light and parking yard light poles and shutters for hedges and shrubs were painted. Four concrete slabs were poured in the driveway back of the boiler room. The piazza settees were repaired.

Three concrete piers were constructed under the hotel. Repairs were made to the roof, gutters, windows and doors and piazza floor. Dressing rooms were built in the Hotel Casino. Two new sills and three posts were put under the south end of the hotel and girders and joints were replaced in the band room in the cellar. The hot and cold water supply was repiped from the basement to the second and third floor rooms and general plumbing repairs were made. Fifty-five bedroom floors were painted and varnished. One hundred and forty-six windows were stained and varnished, walls were washed and painted in eighteen rooms, twelve ceilings were washed and whitened and hall walls were washed and painted. Ceilings of six bedrooms of the annex were washed and whitened. First floor exterior walls, piazza railings, post and trim were painted. Plastered walls were repaired and one ceiling was replastered.

Six concrete piers were built under the cafe. The roof was repaired, a section over the kitchen was rebuilt and flashing and gutters were repaired. The side-walls on the second floor were shingled, new frames and sash were installed on the north and east sides of the second floor. Floor timbers were repaired and repairs were made to the floor of the dining room. Windows and doors were repaired. Stands were made for candy machine and for the dish-washing machine. Hot and cold water supply lines were repiped in the sanitary and general plumbing repairs were made in the cafe. Twenty-four sashes were painted and twenty sashes were stained and varnished. The bar was stained and varnished and the ceiling was washed and whitened in the dining room. Screens were painted and the street side of the cafe was painted. Plastered walls were repaired, a section of the kitchen was replastered and all new window frames were plastered.

Six concrete piers were placed under the pavilion. A section of old trusses was removed, eight new trusses of 26-foot span, and three new trusses of 22-foot span were erected and six new supporting columns were set up. A section of flow girts was replaced and the floor repaired and replaced. The interiors of the pavilion and archway were painted and the archway roof was repaired.

Five concrete piers and a foundation were constructed under the cottage. A shed in back of the cottage was torn down, the back of the building was shingled and a new window was installed and a flight of steps built.

A foundation was built under the west side of Tivoli Sanitary and that side was shingled. The inside of the Tivoli and of the Wharf Avenue sanitaries were painted. Repairs were made to the Tivoli Shelter floors and the stand was altered and enlarged. The shelter was painted.

Concrete coping blocks were cast and placed on the west wall of the bath-house. The interior and exterior were painted and general plumbing repairs were made.

A section of concrete floor was laid in the dormitory cellar. The roof and gutters were repaired, a partition was sheathed and two frames and windows were installed in the basement. Walls were washed and painted, ceilings whitened and floors shellacked in fourteen rooms, four bath rooms and three halls of the dormitory. The exterior of the building and screens were painted.

Some concrete work was done at the waiting room, gutters were repaired, a bulkhead and a garbage shed were built in the rear, the interior and exterior were painted.

A porch was built on the captain's house, the kitchen was painted and screens were painted. The exterior trim and screens of the station were painted.

A new washing machine and one tumbler were installed in the laundry under a contract. The new equipment was piped for hot and cold water and the hot and cold water supply lines in the building were repiped. The water trough

was enlarged, the blower pipe was bricked in and the brick arch over the laundry door was repaired.

Wooden trestles and a platform were erected for the boiler room. The inside of the boiler room, inside of garage, outside of paint shop, and the trim on the power plant and laundry were painted. Steel doors were made and installed on the incinerator.

BATHHOUSES

The bathhouses and beaches under the jurisdiction of the Commission were open each day from July 1 to September 4, 1939, with all bathhouses being opened on warm days between June 16 and July 1.

The attendance and receipts for the bathing season of 1938 at the bathhouses where fees are charged, were as follows:

|                              | <i>Number of<br/>Bathers</i> | <i>Total<br/>Receipts</i> |
|------------------------------|------------------------------|---------------------------|
| Nantasket Beach . . . . .    | 74,004                       | \$16,234.95               |
| Revere Beach . . . . .       | 50,658                       | 11,107.55                 |
| Nahant Beach . . . . .       | 11,888                       | 2,773.55                  |
| Malibu Bach . . . . .        | 11,968                       | 1,196.80                  |
| Magazine Beach . . . . .     | 3,894                        | 318.40                    |
| Hoosicwhisick Pond . . . . . | 1,958                        | 195.80                    |
| Havey Beach . . . . .        | 978                          | 97.80                     |
| Watertown . . . . .          | 444                          | 44.40                     |
| Totals . . . . .             | 155,792                      | \$31,969.25               |

Other bathhouses are maintained on a free basis at the following locations:

- Mystic River, Medford—Foster's Court
- Upper Mystic Lake, Winchester—Sandy Beach
- Charles River Reservation, Brighton—Brighton
- Charles River Reservation, Brighton—Faneuil

The bathhouses at Foster's Court and Sandy Beach were closed for the third season because of pollution of the water due to the overflow of sewerage from surcharged sewer mains into the Mystic and Aberjona rivers. This situation will be remedied upon the completion of the North Metropolitan Relief Sewer which is now under construction. By order of the State Department of Public Health, the new bathhouse on the Charles River in Watertown was closed for the balance of the season on August 23, 1939.

GOLF COURSES

Riverside Public Golf Course in Weston and Ponkapoag Public Golf Course in Canton, were open from early April to November 30, 1939. Attendance and receipts at both courses again showed an increase over the previous year. Records for the courses for the 1939 season are:

|                                     | Riverside   | Ponkapoag   | Total       |
|-------------------------------------|-------------|-------------|-------------|
| Season Memberships . . . . .        | 361         | 570         | 931         |
| Players Paying Green Fees . . . . . | 11,443      | 7,405       | 18,848      |
| Total Rounds Played . . . . .       | 20,224      | 37,000      | 57,224      |
| Receipts:                           |             |             |             |
| Memberships . . . . .               | \$7,220.00  | \$11,400.00 | \$18,620.00 |
| Green Fees . . . . .                | 11,443.00   | 7,405.00    | 18,848.00   |
| Locker Rentals, Season . . . . .    | 561.00      | 702.00      | 1,263.00    |
| Daily . . . . .                     | 55.00       | 43.00       | 98.00       |
| Towels and Soap . . . . .           | 233.25      | 520.10      | 753.35      |
| Miscellaneous . . . . .             | 33.50       | 9.21        | 42.71       |
|                                     | \$19,545.75 | \$20,079.31 | \$39,625.06 |



Both courses were given regular maintenance and some improvements were made. All hurricane damage was cleared up and many trees were planted as replacements. Work under the W.P.A. projects at Ponkapoag, by which nine additional holes are being constructed and a complete fairway watering system is being installed, is progressing well. Although the additional holes will be completed during 1940, they will be allowed to season and will not be played on until 1941.

### BAND CONCERTS

A Legislative appropriation of \$15,000 was made to the Metropolitan District Commission to provide for the playing of band concerts in the Metropolitan Parks District. \$14,794.00 was paid to sixty-six different bands for playing sixty-eight afternoon concerts at nine locations, and twenty evening concerts at six locations, a total of eighty-eight concerts played at fifteen locations. An estimated total of 88,265 persons attended the concerts in addition to hundred of thousands of people who were at Nantasket Beach where afternoon concerts were played by selected bands on twenty-five days during the bathing season, at Revere Beach where afternoon concerts were given on nine days, at Nahant Beach where nine afternoon concerts were played and at Bunker Hill, where an evening concert was presented on June 17th. Bids for concert work were received from 113 bands in the Metropolitan Parks District.

The eleventh annual series of summer symphony concerts was presented at the Music Shell on the Storrow Memorial Embankment, Boston. Those concerts were played by a group of fifty members of the Boston Symphony Orchestra, under the direction of Arthur Fiedler, Conductor. The series included twenty concerts played between July 6 and July 28, inclusive. The attendance at the series was very large, being estimated at 259,000. 86,293 folding chairs were rented during the concerts and the Commission received \$6,040.87 as its share of the receipts from rental charges. Wednesday matinees were held on three dates and were designed primarily as children's concerts. About 16,500 persons attended these concerts; 3,299 chairs were rented at five cents each and the Commission received \$65.94 from these rentals. The total percentage of chair receipts, \$6,106.81 was deposited with the State Treasurer. By a Legislative Act, \$3,750 was contributed by the Metropolitan District Commission towards the cost of the Esplanade Concerts.

### CIVILIAN CONSERVATION CORPS

The C.C.C. camp at Breakheart Reservation in Saugus continued in operation through 1939. A detail of enrollees was assigned to complete work in the Blue Hills Reservation, which had been initiated by the camp previously operating there. The lookout tower and adjoining shelter on Great Blue Hill was completed and it is now the focal point of all persons ascending the hill. A foot trail was constructed from the base of the hill to the tower.

To assist local communities in the alleviation of fire hazard caused by the hurricane, by direction of the Forestry Service, men from the camp worked a total of 13,537 man-days in Reading, Woburn, Lincoln, Lynnfield, Middleton and Boxford. The several town reports have made mention of the value and necessity of the assistance given by the Camp.

In season, approximately 2700 acres of woodland in Breakheart Reservation and Middlesex Fells Reservation were completely worked over in the creosoting and spraying for Gypsy Moths.

At Breakheart Reservation, a complete police signal system was installed which connects directly with the Middlesex Fells Headquarters in Medford. The work included the erection of five call boxes within the reservation, and the laying 3.2 miles of underground cable. The park road, 2.3 miles in length, was given a tar and gravel surface in preparation for being opened to the public. Substantial rustic guard rails were built at all points of danger.

Five parking areas, having a total capacity of 271 cars, were either completed or will be in time for use in the summer of 1940. These areas were all designed with entrance and exit roads which will provide for easier use by the public and better supervision and control by the authorities. They are located to facilitate use of picnic areas and the two ponds. In order to define the limits of the reservation to prevent the trespass of hunters, work was started on the erection of fencing along the boundary in wooded areas. 12,000 feet of woven wire fence has been purchased and posts are being made from hurricane-felled oaks.

Since the hurricane of 1938 and the resulting increase of fire hazard in all the surrounding districts, the Government has equipped the camp with a complete outfit of fire-fighting tools, a portable pump and two thousand feet of hose. Five trained units of twenty men each were placed at the disposal of the State Fire Warden for service in or out of the state. No call was received from the Warden, but assistance was given to nearby communities on several occasions. During the fire season, fully equipped trucks are kept available at all times.

During 1939, a total of 16,184 men-days was worked on projects in Commission-owned areas.

Walter Hatch continued as camp superintendent. Captain William H. Smith has continued as camp commander and Dr. Alexander H. McRobie as camp physician. Captain Robert Alexander was assigned as camp assistant to Captain Smith.

A determined effort was made by the Commission to obtain the reassignment of a camp to the Blue Hills Reservation, the old SP-1 camp having been abandoned by orders from Washington on September 28, 1937. But our efforts and those of other interested groups and individuals were unsuccessful. A program of eighteen projects having a total of 73,000 man-days of work was drafted. Many of the projects will eventually have to be undertaken with all costs being born by the Parks District.

#### WORKS PROGRESS ADMINISTRATION

During the 1939 season the Commission, in cooperation with the Works Projects Administration for Massachusetts, sponsored a total of thirteen new W.P.A. projects within the Parks District. The Legislature appropriated a sum of \$40,000 for the Procurement of W.P.A. Funds, during 1939;; a reduction from the \$50,000 which had been appropriated for the purpose in each of the past few years. A Federal regulation adopted during the year restricted all projects to a maximum ratio of seventy-five percent Federal Funds to twenty-five percent sponsor's funds. This regulation tended to increase the previously low ratio of Commission funds to Federal funds.

The new projects as drafted, provided Federal funds of \$424,035 mostly for labor, and Commission funds of \$191,562, or a total value of all projects of \$615,597. Of the Commission funds, \$50,812 is the value of services of personnel regularly employed, \$59,799 is the fair rental value of Commission-owned equipment, \$74,735 was provided for the value of material and supplies, new and on hand, and \$6,216 for incidental direct costs. The actual cost requirements will be drawn from the appropriation above described and from accumulated balances from past appropriations.

The projects will provide employment for 1,111 W.P.A. workers and a total of 6,635 man-months of work.

The following listing briefly describes the principal work items or objectives of all the new projects written and approved during 1939:



- (1) Metropolitan Parks District; to continue, for a 6-month period, the operation of the W.P.A.-M.D.C. Recreation Project, a program of supervised sports, sports training, hikes, nature talks, etc.
- (2) Stony Brook Reservation, Neponset Valley Parkway, West Roxbury Parkway, Dedham Parkway, Bellevue Hill Tower, Veterans of Foreign Wars Parkway and Turtle Pond Parkway; a Forest Conservation project to embrace tree surgery, insect pest eradication, stump removal, tree surgery, etc.
- (3) Blue Hills Reservation in Quincy; to remove hurricane-felled trees and debris for the elimination of fire hazard in an area of 3,500 acres.
- (4) Stony Brook Reservation, Hyde Park; to remove hurricane-felled trees and debris for the elimination of fire hazard in an area of 750 acres.
- (5) Chickatawbut Road at Granite Street, Braintree; improvement and beautification of this entrance to the Blue Hills Reservation.
- (6) Blue Hills Reservation and Metropolitan District Parkways located in Boston, Braintree, Brookline, Canton, Dedham, Milton, Quincy and Randolph; to reconstruct the Police Signal System. Work to include the laying of about twenty-eight miles of underground cable and erection of ten miles of overhead cable.
- (7) Blue Hills Division Headquarters, Hillside Street, Milton; to construct a two-car garage attached to Headquarters Building, to house captain's car and police ambulance.
- (8) Blue Hills Division; Gypsy Moth Control, to creosote Gypsy Moth and other leaf-eating insect egg clusters in season, and to spray in season with approved formula.
- (9) Blue Hills Reservation at Unquity Road and Canton Avenue, Milton; to develop an area of eighteen acres for playground and skating use.
- (10) Middlesex Fells Reservation; to reconstruct 2½ miles of Police Signal System destroyed by the hurricane.
- (11) Nahant Beach Bathhouse, Nahant; to construct a 30-foot by 75-foot brick garage and workshop building.
- (12) Charles River Reservation in Newton, Waltham and Weston; to clear hurricane-felled trees and debris and pull stump along ten miles of river bank for beautification, fire hazard reduction and flood control.
- (13) Quinobequin Road, Newton; to consider 2,000 linear feet of concrete curbing, build 200 linear feet of rubble masonry retaining wall and rip-rap. 600 linear feet of bank along Dresser's Pond, all to promote public safety and to beautify an attractive and popular recreational area.

During 1939, work was completed on the construction of twenty-four large fireplaces, twenty-four stone tables and forty-eight stone seats, and the installation of twenty-four drinking fountains along the ocean side of the Nahant Beach Parkway in Nahant. This development, while felt highly desirable, was recognized as an innovation in public bathing beach facilities and its popularity was closely watched. In the six months of use after construction, the fireplaces were seldom unused. It was necessary to issue permits for two-hour periods until midnight and it is estimated that over 100,000 persons participated in their use.

Among other projects operated and completed, immeasurable assistance was realized from the Hurricane Cleanup and Insect Pest Control Projects and much general park improvement and development work was performed which would have been impossible with regular maintenance appropriations.

#### W.P.A.—M.D.C. RECREATION PROJECT

The recreation project, inaugurated in 1937, was enlarged and there was an increase in the number of active participants in the varied activities con-

ducted by the project supervisors. The estimated total of persons who took part in the programs is as follows:

|   |         |   |           |
|---|---------|---|-----------|
| Band Concerts . . . . .                   | 135,855 | Nature walks . . . . .  | 109,864   |
| Baseball . . . . .                        | 121,960 | Picnics . . . . .   | 21,752    |
| Basketball . . . . .                      | 7,652   | Skating . . . . .   | 125,100   |
| Birdhouses and feeding stations . . . . . | 4,285   | Skiing . . . . .  | 18,968    |
| Campfires and out-door cooking . . . . .  | 15,850  | Softball . . . . .  | 28,750    |
| Fishing . . . . .                         | 11,976  | Tennis . . . . .  | 36,544    |
| Football and tag football . . . . .       | 103,861 | Tobogganing . . . . .   | 17,045    |
| Hiking . . . . .                          | 110,800 | Volley-ball . . . . .   | 27,419    |
| Hockey (ice) . . . . .                    | 13,850  | Special outings for adults, children, clubs, etc., not included above . . . . . | 136,756   |
| Horse-shoe pitching . . . . .             | 52,605  |   |           |
| Moonlight walks . . . . .                 | 4,366   | Total . . . . .   | 1,105,258 |

52,000 copies of a weekly "Nature Study Bulletin", prepared by the project Naturalist, were distributed by mail.

In addition to the regular program, which had proven so popular in the past, were added salt water and ice fishing trips, sea shore outings, erection and hanging of bird feeding stations, lectures and training in nature study for teachers and nurses, issuance of Nature Bulletins, erection and use of basketball blackboards, construction of tables for use at the fireplaces and construction of regulation-sized ice hockey rinks.

The weekly nature walks and "hikes for health" have stimulated interest in nature study and preservation of wild life, not only in the Metropolitan Parks District, but throughout the state, and the influence and value of the work of the project cannot be accurately measured. From reports of increased numbers using the varied facilities, the value to the public has been definitely proven and appreciated.

The steady cold during the early winter made more ice skating possible at the safe flooded areas provided at Magazine Beach, the Speedway area and at Waverly Oaks. Regulation rinks were constructed at Magazine, the Speedway and two at the Lagoon and these met a long-felt want for more organized hockey for school boys. The use of the many out-door fire places increased tremendously and night camp fires and cook-outs become very popular.

Plans are under way to increase day camp and week-end camping facilities in the Park reservations, and in cooperation with the National Park Service, it is hoped that considerable progress may be realized.

Acknowledging that the forty hour work week is here, and the thirty hour week "around the corner", the W.P.A.-M.D.C. Recreation Project is endeavoring to provide for these leisure hours and to this end has adopted the slogan "Take up the Slack."

## V. Special Investigations

In accordance with Chapter 27 of the Resolves of 1939, which provided "for an investigation by the Metropolitan District Commission relative to establishing a public golf course in the city of Medford and the town of Winchester, or either of them, and a recreational area for winter sports in said city", a report will be filed with the Clerk of the House of Representatives on or before the first Wednesday of December, 1940.

## VI. Police Department

During the past year the following changes occurred in the personnel of the Metropolitan District Police:

Sergeant Thomas R. Qualter, appointed to the force on April 26, 1899, was retired May 2, 1939. Officer John F. Keaney, appointed October 27, 1919, was retired March 17, 1939. Officer Harvey Bartlett, appointed June



20, 1910, was retired July 21, 1939. Officer Francis J. Philbrick, appointed April 15, 1902, was retired September 12, 1939. Policewoman Mary Sugrue, appointed June 4, 1921, was retired December 14, 1939. Officer Thomas F. O'Donnell resigned on February 11, 1939.

Officer Thomas B. Dawley was promoted to the rank of Sergeant and four men were appointed regular patrolmen.

During the year the following men were commended in General Orders by the Commission:

Lieutenant William G. Kiniry  
Officer George J. Boudreau  
Officer Francis J. Philbrick  
Officer Dennis G. Mulvihill

At the end of 1939 the force was as follows:

1 Superintendent  
1 Deputy Superintendent  
6 Captains  
6 Lieutenants  
21 Sergeants  
194 Patrolmen  

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229 Total

Lost and stolen property having a total value of \$51,636.51 was recovered and returned to the owners.

7,944 hours of extra duty, without compensation and not including court work, was performed by members of the force in caring for visitors at special functions, such as handling crowds at football games, concerts, regattas, races, etc. 247 ambulance and 325 patrol wagon calls were answered during the year.

The department had 2,231 cases before the various courts during the year. Not included in the court cases were 76 cases of wayward girls and delinquent boys which were handled by the policewomen without court action. Several of the girls apprehended had been reported as runaways. Of the cases before the courts, 982 were for offenses against the General Laws, 582 for Motor Vehicle Law violations and 667 for offenses against the Metropolitan District Commission Rules and Regulations. Of the Motor Vehicle Law violations, 148 cases were for operating under the influence of intoxicating liquor and 70 cases of operating so as to endanger the lives and safety of the public. Of the offenses against the M.D.C. Rules and Regulations, there were 128 violations of the General Rules, 108 violations of the Automobile Rules and 431 violations of the Speeding Regulations. Fines totalling \$12,831.00 were assessed by the courts. A detailed listing of the above cases may be found in Appendix No. 3.

The morale and discipline of the department was good, but it was necessary to prefer charges against one officer.

During January and February the department was drilled in marching according to the latest U. S. Army regulations under Deputy Superintendent Henry R. Hayes as Drillmaster and Lieutenant William G. Kiniry as Assistant Drillmaster. The drills were preceded by lectures on criminal law, police and court procedure, first aid instruction, instructions on the use of firearms and gas equipment. Those lectures were given by Deputy Superintendent Hayes and selected superior officers of the department.

During the year, thirty-six illustrated talks concerning the duties and activities of the department were delivered by the Superintendent and the Deputy Superintendent before large groups of citizens at the invitation of civic, fraternal and church clubs. The talks and the accompanying pictures have become so popular and so much in demand that many invitations to address organizations had to be declined.

On January 10, 1939, Commissioner Hultman was directed by His Excellency Governor Saltonstall to furnish all necessary assistance to the Commissioner

of Public Safety for the duration of a strike called by the truck drivers of the State. Commissioner Hultman directed the Superintendent to assign the Deputy Superintendent, two Lieutenants, twelve Sergeants and ninety-six Patrolmen, to report at the Charles River Basin Station and at the Charles River Upper Division Station, Boston, for assignment if necessary to locations throughout the State. On January 10, 1939, at 10 A.M., one-half of the above detail went on duty with the uniform divisions of the State Police at barracks at West Bridgewater, Framingham, Andover, Topsfield, Concord and Wrentham. On January 11, 1939, the remaining half of the above detail went on duty relieving the other half at the above locations. Four patrol wagons and fifteen white cruiser cars, completely equipped, comprised the department motor equipment that was used for transportation for this detail. The strike was settled on January 12, 1939, at 11:30 A. M., and the officers returned to their respective divisions.

On May 2, 1939, at 12:15 P.M., the police department of the City of Everett teletyped an urgent appeal for police assistance in suppressing disorder in the vicinity of the water front plant of the Beacon Oil Company, where a strike of maritime union workers was in progress. The Commissioner directed the Superintendent to detail the Deputy Superintendent, two Lieutenants, six Sergeants and forty-eight Patrolmen, to assist the police department of Everett. The Deputy Superintendent and twenty-five Patrolmen who were quickly mobilized, left immediately for Everett and went on duty in the strike area at 2:30 P.M. This detail remained on duty until midnight when they were relieved, and thereafter two shifts of our department continued patrol duty. At 9 A.M., on May 5, 1939, Superintendent Woods attended a conference with representatives of the labor union, the oil company officials, and the Mayor and city officials of Everett. Superintendent Woods suggested the discontinuance and closing of a local employment agency which was supplying employees to the company. This suggestion was accepted by the company and the closing of this office had a great deal to do with the prevention of further disorder. The work and the conduct of the officers assigned to this detail was excellent and letters of commendation and appreciation were received by the Commissioner from the Honorable Frank E. Lewis, Mayor of Everett and from Police Chief George O. Kenney.

On June 19, 1939, the department provided a cruiser car and motorcycle escort for the delegates attending the 1939 convention of Kiwanis International who convened at Boston. The escort accompanied the delegates from Boston to the New Ocean House at Swampscott. The Superintendent detailed the Deputy Superintendent, nine motorcycle officers, five cruiser cars with officers driving and twenty-five patrolmen to direct traffic at intersections along this route. A letter of thanks was received by the Commissioner from the National Officers of Kiwanis International for the service provided.

On November 12, 1939, the Commissioner of Public Works and the Commissioner of Public Safety asked Commissioner Hultman to cooperate with these two departments in facilitating the passage of the "Snow Cruiser" of the Byrd Antarctic Expedition, from the New York-Massachusetts line across this state to the Army Base in South Boston. The route selected was over our parkways in Newton, Brookline and Boston. The Superintendent assigned the Deputy Superintendent, eight Sergeants and fifty-eight Patrolmen from all divisions to this detail. These officers went on duty at 4 P.M., November 12, 1939, and remained on duty until dismissed at 7:30 P.M., when State Police Headquarters notified Metropolitan Police Headquarters that the cruiser would remain at Framingham over night. Our Police Headquarters was notified at 9 P.M., on November 12, 1939, that the cruiser would start at 3 A.M., on the morning of November 13th for the Army Base. The Deputy Superintendent, one Captain, two Sergeants and fifteen Patrolmen went on duty at 3 A.M., and remained on duty until 8 A.M., when the cruiser reached her destination. The excellent manner in which this detail performed their duty brought favorable comment from the press and from the thousands of people who lined the route to see this unique vehicle.



In addition to the above duties, our department assisted the local police departments at football games and other events in many of the cities and towns in the district in response to the request of local authorities. They also performed the usual police duty at football games at the Harvard Stadium, the Esplanade Concerts on the Storrow Memorial Embankment and at Band Concerts throughout the summer in various localities.

### VII. Metropolitan Water District and Works

The Water District now includes 20 municipalities with an area of about 174 square miles and a population, as of July 1, 1939, of 1,595,680. The Water Works lands include an area of about 19,000 acres.

The works under the control of the Water Division include 9 storage reservoirs with 200 square miles of tributary watershed, a total storage capacity of 80 billion gallons and water surface of 8,600 acres; 60 miles of aqueducts; 2 hydro-electric power stations with a combined capacity of 7,000 horse power; 16 miles of high-tension power transmission line; 6 distribution pumping stations with a combined equipment of 7,900 horse power and pumping capacity of 346 million gallons a day; 13 distribution reservoirs with a capacity of 2.5 billion gallons and 181.06 miles of distribution mains. The consumption of water from the Metropolitan Water Works during the year by the 18 municipalities entirely supplied was 49,416,593,000 gallons, equivalent to an average daily consumption of 135,387,900 gallons or 92 gallons per capita for a population of 1,475,730 in the district supplied.

### CONSTRUCTION

Further grants of funds from P.W.A. were denied to complete the work of a duplicate main reinforcing the Southern High-service supply for Milton, Quincy and the Dorchester District of Boston. The studies, surveys, contract plans and specifications have been completed and it is expected that this work will be contracted for early in 1940. Studies and surveys have also been made to reinforce the Northern Extra High-service for Arlington, Belmont and Lexington. It is proposed to erect a standpipe on Turkey Hill in Arlington and construct a new force main between the pumping station and the standpipe and connect with the present mains leading to the standpipe on Arlington Heights, which will reduce the operating head at the station and increase the pumping capacity of the present equipment. It is then proposed to transfer a larger portion of the Arlington service now on the Northern Extra High-service to the Intermediate High-service. Studies and surveys have also been made to duplicate the suction main from the Weston supply main to the Arlington Pumping Station in order to care for the increased demands on the Northern Extra High-service District.

### *Reinforcing Southern High-service Pipe Lines*

The work under Contract No. 128, P.W.A. Docket No. Mass. 1516-F, Mass. State Project No. D-203, made with M. DeMatteo Construction Company of Roslindale on October 18, 1938, was 16.7% completed on January 1, 1939. The work on this contract comprised the furnishing and laying of 9,352.83 linear feet of 36-inch steel water pipe for reinforcing the Southern High-service Pipe Lines to Milton, Quincy and the Dorchester District of Boston. The work on this contract was continued through the winter with a small force during very unfavorable weather. The force was gradually increased as the weather conditions improved. Considerably more ledge was found than was shown on the plans and there was a material increase in replacement of pavement due to undermining on account of the length of time the trench remained open, blasting and changing locations of underground structures. The work on this contract was completed on October 6 at a total expenditure of \$223,377.59.

The total amount of Federal grant received to January 1, 1940, was \$84,000.00.

The working pressure of this pipe line is equivalent to 250 feet above Boston City Base, and the Contractor was required to test the line to a pressure equivalent to 350 feet above Boston City Base. The 10,991 linear feet of 36-inch main was tested in September. The allowable leakage, under the Specifications, was not to exceed  $\frac{3}{4}$  of 1 cubic foot per hour per 100 linear feet of pipe line. The allowable leakage, under the Specifications, for this length of line would have been equivalent to 10.3 gallons per minute. The 3-hour test gave an actual leakage of 9 gallons per minute.

MAINTENANCE

Precipitation and Yield of Watersheds

The annual precipitation of 39.67 inches on the Wachusett watershed was 6.12 inches below the average for the past 43 years of rainfall record. The precipitation was well above normal during the months of February, March, April and October, and below normal during May, July, September, November and December. For the Sudbury watershed, the precipitation was 39.16 inches or 5.54 inches below the average for the past 65 years, and for the Cochituate watershed the precipitation was 41.84 inches or 3.32 inches below the average for the past 77 years.

The average daily yield per square mile of the watersheds was 1,096,000 gallons for the Wachusett, 784,000 gallons for the Sudbury and 889,000 gallons for the Cochituate. These yields are all below the averages of the 43-year record on the Wachusett watershed, the 65-year record on the Sudbury watershed, and the 77-year record on the Cochituate watershed.

Storage Reservoirs

The capacities of the storage reservoirs of the Metropolitan Water Works, the elevation of the water surfaces and the quantity of water stored in each reservoir at the beginning and at the end of the year are shown by the following table.

| STORAGE RESERVOIRS        | Eleva-<br>tion <sup>1</sup><br>* | Total<br>Capacity<br>(Gallons) | JAN. 1, 1939   |                                   | JAN. 1, 1940   |                                   |
|---------------------------|----------------------------------|--------------------------------|--|-----------------------------------|--|-----------------------------------|
|                           |                                  |                                | Eleva-<br>tion <sup>1</sup><br>of<br>Water<br>Sur-<br>face | Available<br>Storage<br>(Gallons) | Eleva-<br>tion <sup>1</sup><br>of<br>Water<br>Sur-<br>face | Available<br>Storage<br>(Gallons) |
| Cochituate Watershed:—    |                                  |                                |  |                                   |  |                                   |
| Lake Cochituate . . .     | 144.36                           | 2,097,100,000                  | 142.62   | 1,591,040,000                     | 143.31   | 1,751,850,000                     |
| Sudbury Watershed:—       |                                  |                                |  |                                   |  |                                   |
| Sudbury Reservoir . . .   | 260.00                           | 7,253,500,000                  | 257.33   | 4,893,750,000                     | 257.42   | 4,930,430,000                     |
| Framingham Res. No. 1 . . | 169.32                           | 289,900,000                    | 167.93   | 135,990,000                       | 167.64   | 123,580,000                       |
| Framingham Res. No. 2 . . | 177.12                           | 529,900,000                    | 176.23   | 441,590,000                       | 176.03   | 433,060,000                       |
| Framingham Res. No. 3 . . | 186.50                           | 1,180,000,000                  | 184.27   | 820,900,000                       | 184.54   | 842,300,000                       |
| Ashland Reservoir . . .   | 225.21                           | 1,416,400,000                  | 224.47   | 959,650,000                       | 224.46   | 959,100,000                       |
| Hopkinton Reservoir . . . | 305.00                           | 1,520,900,000                  | 304.11   | 1,014,220,000                     | 302.39   | 908,500,000                       |
| Whitehall Reservoir . . . | 337.91                           | 1,256,900,000                  | 337.41   | 852,440,000                       | 336.87   | 748,340,000                       |
| Wachusett Watershed:—     |                                  |                                |  |                                   |  |                                   |
| Wachusett Reservoir . . . | 396.50                           | 67,000,000,000                 | 392.45   | 50,567,150,000                    | 375.74   | 30,877,120,000                    |
| Totals . . . . .          | —                                | 82,544,600,000                 | —  | 61,276,730,000                    | —  | 41,574,280,000                    |

<sup>1</sup>Elevation in feet above Boston City Base.  
\*Full reservoir with flashboards on overflow.

The total storage capacity shown in the third column of the table is to the bottom of the reservoirs. The available storage shown in columns 5 and 7 is the quantity that can be conveniently used for consumption. There was a loss in available storage of 19,702,450,000 gallons during the year.







*Wachusett Reservoir*

At the beginning of the year the water in the reservoir was at elevation 392.45 or 2.55 feet below normal, full reservoir level, elevation 395. The quantity of water in storage was 61,567,200,000 gallons or 94.77% of capacity. The water was held at substantially this elevation with flashboards on the waste weir until May 31. After that date, there was gradual and continuous lowering of the surface of the water at an average rate of 2.9 feet per month due to the demands of the Metropolitan Water District until October 22, when the elevation of 379.29 was reached. During the next 10 days, no water was drawn from the reservoir on account of repairs being made at the Assabet Bridge on the Wachusett Aqueduct and during this time there was a rainfall of 3.55 inches and the water in the reservoir rose to elevation 379.78 by November 1. From November 1 to the close of the year, there was a continuous draught upon the reservoir, lowering it at the rate of about 2 feet per month. During the year, 15,611,100,000 gallons of water were discharged into the Nashua River below the dam, of which 14,958,100,000 gallons flowed over the spillway and 653,000,000 gallons were drawn through the fountain in the pool in accordance with the provisions of General Laws. During May, November and December, 534,800,000 gallons of water were discharged from the Ware River Intake Works into the Wachusett Reservoir through the Quabbin Aqueduct Tunnel. At the close of the year, the water in the reservoir was at elevation 375.74 or 19.26 feet below full reservoir level. The reservoir contained 41,877,100,000 gallons of water or 64.46% of the capacity, giving a net loss in amount of water in storage from the beginning to the close of the year of 19,690,100,000 gallons. During the first 5 months of the year, there were discharged from the area reserved and developed by the City of Worcester 2,323,000,000 gallons of water into the Wachusett watershed. This area was formerly tributary to the reservoir but was diverted by the City of Worcester for a supply in 1911. The City of Worcester has the right to divert water from the Quinapoxet Pond watershed which is also a tributary to the Wachusett Reservoir, but has not as yet exercised this right.

Under the provisions of the Acts of 1923, Chapter 348, the Town of Clinton pumped 225,100,000 gallons of water from the Wachusett Reservoir from May 8 to the close of the year. Of this amount, 37,200,000 gallons were sold to the Town of Lancaster under the provisions of Chapter 299 of the Acts of 1936.

The North Dike, which was damaged by the Hurricane of September 21, 1938, was repaired by placing 2,277 cubic yards of rock on the riprap facing of the Dike. This rock varied in size from  $1\frac{1}{2}$  to 27 cubic feet and was secured from the waste rock at the quarry in Boylston from which most of the rock for the Wachusett Dam was quarried at time of construction. The spalls were obtained at the Wachusett Aqueduct Tunnel dump in Berlin. The work was begun under this contract, which was with R. H. Newell Company of Uxbridge, on December 28, 1938, and completed on February 22, 1939, at a cost of \$10,247.67.

The Fish Ladder at the Circular Dam at the head of the reservoir at Quinapoxet Basin was in continuous service from March 6 to October 31. The granite crest at the Circular Dam was repaired by rejoining all of the joints with Portland cement mortar. Major repairs have been made to the breakwater and the boat landing, which were seriously damaged during the Hurricane. The slope paving at the waste weir was repaired by filling all loose joints with Portland cement mortar.

On November 16, 1938, Contract No. 82-M was made with the Oliver Whyte Company of Medford for furnishing and attaching brass wire netting to the offside of the pipe rail fence on the promenade of the dam at a cost of \$4,865. The work consisted of furnishing and attaching 180 panels of wire netting, each panel being about 9 feet 9 inches long and  $31\frac{1}{2}$  inches wide, and were made of 1-inch by  $\frac{3}{8}$ -inch by  $\frac{1}{8}$ -inch bronze channels. The wire netting was made from No. 9 crimped soft drawn brass wires, fastened to these frames. The shop work and fabrication of material was begun shortly after execution of the contract. Preliminary field work was begun on January 18, 1939.

Actual erection of the netting panels was begun on April 1, and the contract was completed May 20, 1939. Many favorable comments have been received from visitors at the dam regarding the safety which the netting affords the general public.

Seven department dwelling houses, the buildings at Clinton Storage Yard, the Aqueduct Terminal Chamber, Marlboro, boat house in Boylston, the office, power station and garage at the dam have been painted and kept in good condition. The two department houses on Wilson Street, Clinton, have been repaired and oil burning heating systems installed under Contract No. 90-M with R. Maitland & Son. These premises were connected with the sewerage system of the Town of Clinton, thereby doing away with the use of cesspools.

### *Sudbury Reservoir*

On January 1, 1939, the water in the Sudbury Reservoir was at elevation 257.33 or 1.67 feet below the crest of the spillway of the dam. During the period from January 1 to April 24, while the flashboards were off the dam, the elevation varied about 2 feet with an average elevation of 257.70 which is about 0.30 of a foot below the top of the crest. From April 25 to November 14, the flashboards were in place on the dam and the elevation varied about 4 feet with an average elevation of 258.68, which is about 0.32 of a foot below the top of the crest. From November 15 to December 31, the flashboards were again off the dam and the average elevation was 257.80 or 1.2 feet below the crest. At the end of the year the elevation of the water in the reservoir was 257.42.

Arrangements were made with the Metropolitan District Water Supply Commission to repair Unit No. 3 at the Sudbury hydro-electric plant. The work of installation with parts purchased from and under the supervision of S. Morgan Smith Co. was done by our maintenance force from September 27 to October 21. During this period, water was allowed to spill over the Sudbury Dam into Framingham Reservoir No. 3 and there was no waste over the spillway other than this during the year. Water was by-passed under Units Nos. 1 and 2 on December 19 and 20 while repairs were made to Unit No. 2. All of the water drawn from the Sudbury Reservoir, with the exception of the 743,900,000 gallons which passed over the dam and the 75,600,000 gallons which were by-passed, was used to generate electricity.

The total amount of water received from the Wachusett Reservoir through the Wachusett Aqueduct was 49,379,500,000 gallons, and the total amount of water drawn from the Sudbury Reservoir was 54,743,700,000 gallons.

The Town of Southborough pumped 52,782,000 gallons, equivalent to 144,600 gallons per day, directly from the Sudbury Reservoir.

The grounds below the Sudbury Dam were kept in as good condition as possible, but due to the work on Shaft No. 4 of the pressure tunnel it has been impossible to keep the grounds and driveways in a respectable condition.

The 0.84 of an acre of land acquired from Eliza W. Harrington has been cleaned and the dump covered, improving the appearance and sanitary condition of this location. The land has now been posted and no further dumping of rubbish will be permitted.

Under the rights reserved for the Town of Southborough, the Southborough Ice Company cut and housed about 1,575 tons of ice from the Sudbury Reservoir for use of the residents of the town only. The cutting operations were begun on January 18 and continued for 4 days.

Minor repairs have been made to the department houses and to the Fayville Swimming Pool filters.

### *Framingham Reservoir No. 3*

On January 1, 1939, the water in this reservoir was at elevation 184.27 and at the end of the year the elevation was 184.59. The elevation of the water has varied throughout the year, part of the time to accommodate the con-



tractor installing the reinforced concrete pipe for the pressure aqueduct being constructed by the Metropolitan District Water Supply Commission. The flashboards were kept in place on the overflow throughout the year. The water from the Sudbury Reservoir was used to maintain this reservoir at a convenient elevation. All of the water drawn for the Metropolitan Water District and the Town of Framingham was from this reservoir through the Sudbury Aqueduct. During the first 4 months of the year, 6,204,800,000 gallons of water were wasted into the Sudbury River due to run-off from the watershed following very heavy rains.

The grounds have received the usual care and some minor repairs have been made to the buildings.

*Ashland, Hopkinton and Whitehall Reservoirs  
and the  
South Sudbury Pipe Lines and Pumping Station*

No water was drawn from the Ashland, Hopkinton and Whitehall Reservoirs for consumption during the year, but they have been kept in reserve for emergency use. The South Sudbury Pipe Lines and Pumping Station were not in use during the year to supply water for use in the district as there was an ample supply of water of better quality available from the Wachusett and North Sudbury watersheds. The pipe line from Framingham Reservoir No. 2 was kept in readiness for use in case of emergency and the pipe line from Hopkinton to Sudbury Reservoir was kept in readiness for use except that the chlorinator and some of the machinery had been removed from the Pumping Station. The buildings and grounds have received the usual care.

*Framingham Reservoirs Nos. 1 and 2 and Farm Pond*

At the beginning of the year the water in Framingham Reservoir No. 1 was at elevation 167.93, and at the end of the year the elevation was 167.64. The water in Framingham Reservoir No. 2 on January 1, 1939, was at elevation 176.23 and at the end of the year the elevation was 176.03. No water was drawn from these reservoirs for the supply of the Metropolitan Water District or the Town of Framingham. The total waste over Framingham Reservoir No. 1 Dam into the Sudbury River was 21,131,100,000 gallons or an average of 57,893,000 gallons per day. The maximum waste on any one day was 331,400,000 gallons on April 2. The water in these reservoirs was drawn down to a low elevation to provide storage in case of a sudden yield of the watershed in order to keep the flow of the Sudbury River as low as possible during the laying of the pressure aqueduct under the river bed. At the headquarters at the Bullard place at Salem End Road, Framingham, the garage was remodeled to give more room for housing automobiles. Four stalls equipped with overhead doors and the carpenter shop are now located in this building. A storeroom for electrical supplies and a large storeroom for lumber are located on the second floor. The barn floor was repaired by installing new timbers and floor, and the post supporting the floor was relocated to make room for the storage of motorboats in the basement.

Advantage was taken of the low water in Reservoir No. 1 to remove the lily and rush roots along the north shore of the reservoir.

At Framingham Reservoir No. 2 all of the ironwork inside the gatehouse was painted. The iron and woodwork at the foot of the bridge across the overflow of the dam and the flashboard standards were also painted. A new fence with chestnut posts and 2-inch by 6-inch rails was erected for a distance of 220 feet along the driveway to the dam. The Fountain Street fence, which was damaged by parties unknown, was repaired with new rails.

Framingham Reservoir No. 2 was again open for fishing from July 1 to October 1 for the residents of the towns of Ashland and Framingham and the Metropolitan Water District. There were 613 permits issued but only a small number of people used these permits. Fishing conditions around the reservoir were very satisfactory.

The elevation of the water in Farm Pond on January 1, 1939, was 159.35 and at the end of the year the elevation was 158.99. The Town of Framingham pumped water for its supply from its filter galleries on the shore of Farm Pond every day until November 28 when the new supply works for the Town became available. A total of 189,226,000 gallons of water was taken from the galleries during the year. Stop planks were kept in place at the outlet of the pond at elevation 159.33 throughout the year. Water was wasted from the pond into the Sudbury River during January and May, the total amount being 70,800,000 gallons. The Boston and Albany Railroad used about 16,000,000 gallons and the New York, New Haven and Hartford Railroad about 5,000,000 gallons of water from Farm Pond for use in their locomotives during the year.

### *Lake Cochituate*

At the beginning of the year, the water in Lake Cochituate was at elevation 142.62 and at the end of the year at elevation 143.31. No water was drawn from the reservoir for the supply of the Metropolitan Water District. The yield of the watershed was allowed to waste through the outlet gate at the dam. The total amount wasted was 5,056,400,000 gallons, equivalent to an average of 13,853,000 gallons per day.

The department house buildings have received the usual care, being painted and small repairs made during the year. The garage and shop were shingled with asphalt shingles. The improvement ditches of the Pegan Brook intercepting works were cleaned and the adjoining land mown, disposing of the brush and weeds.

The lake was opened this year for boating and fishing under permits. Very little trouble was experienced with the fishing at the lake, but there was some trouble in connection with the boating as it was impossible to obtain the registration numbers of the boats from which men were swimming at a distance from the shore. No additional appropriation was available to patrol the lake during the season in which boating and fishing were permitted. There have been many complaints from the neighborhood on account of the noise, especially of the boats using outboard motors. The total number of fishing permits granted for the lake was 2,124; number of boats registered, 286; and the number of operators' licenses was 503. Permits were granted for 15 boat landings adjoining the lands of abutters. Most of the boats were moored near Kansas Street and south of the Worcester Turnpike in Natick.

### AQUEDUCTS

The *Wachusett Aqueduct* was in use 293 days and the quantity of water drawn from the Wachusett Reservoir was 49,470,200,000 gallons, equivalent to an average of 135,535,000 gallons per day for the entire year, and all of the water was used to generate electric energy at the Wachusett power station before it was discharged into the aqueduct.

The Westborough State Hospital pumped 90,529,000 gallons of water from the aqueduct terminal chamber in Marlborough during the year, equivalent to a consumption of 248,000 gallons per day.

Brush, grass and weeds were mown and disposed of for a distance of 10 miles along the aqueduct and the Water Works land bordering the open channel portion of the aqueduct in Southborough was protected from trespass by cattle in an adjoining pasture by erecting 675 linear feet of 5-strand wire fence.

The Assabet Bridge portion of the aqueduct which developed very serious leaks late in the fall was waterproofed with a 1-inch coat of mortar lining applied to the entire inside surface. The work was done by the Metropolitan District Water Supply Commission under Contract No. 100. The granolithic walk on the top of the bridge was repaired by our labor maintenance force. These repairs consisted of patching several of the granolithic slabs, grouting all the joints with Portland cement mortar, mopping the granolithic surface



with a coat of hot Tarmac P and covering the entire surface with 1 inch of hot Type I Asphalt top mix rolled with a heavy hand roller.

The *Weston Aqueduct* has been in service throughout the year with the exception of 6 short interruptions, equivalent to 44 hours when the aqueduct was shut down on account of electrical trouble and to inspect siphons at Sudbury River and Happy Hollow. The total quantity of water drawn from the Sudbury Reservoir into the aqueduct for delivery into the Weston Reservoir during the year was 41,835,300,000 gallons, equivalent to 114,617,000 gallons per day. The total amount of water wasted from the aqueduct during shut-downs and sterilization, flushing, etc., was 35,100,000 gallons.

At the Sudbury River and Happy Hollow siphons, second mains parallel with the existing 90-inch steel main were installed by the Metropolitan District Water Supply Commission under Contract No. 73. The two inverted siphons are precast-steel-cylinder concrete pressure pipes, 9½ feet inside diameter, which will increase the capacity of these siphons to the full capacity of the aqueduct. The present 90-inch steel pipe siphons will be cleaned and lined with cement mortar.

After the new siphons were installed they were sterilized by employees of this Commission and put into service, Happy Hollow on November 1 and the Sudbury River on November 21.

The land along the aqueduct was mown and the material disposed of and the buildings have received the usual care. The culverts along the aqueduct were kept clean during the summer and free from ice during the winter, and the boundary fences along the aqueduct were repaired and painted.

The *Sudbury Aqueduct* was in continuous use throughout the year and a total of 7,260,700,000 gallons, or an average of 19,892,000 gallons per day, was drawn from Framingham Reservoir No. 3 and delivered to Chestnut Hill Reservoir for consumption in the water district, and in addition 321,347,000 gallons or an average of 880,400 gallons daily were sold to the Town of Framingham.

The aqueduct right-of-way was mown and kept clean, and the culverts were kept free of ice during the winter months. The buildings and ironwork connected with the aqueduct were kept in repair and painted. Minor repairs were made to the Echo and Waban Bridges.

Pits were dug near the aqueduct where it passes the Gas Works and the Gas Company installed small automatic pumps to keep the ground water table down so that the tarry oils would not seep into the aqueduct.

The *Cochituate Aqueduct* was not used during the year, but was kept in readiness for use in case of emergency. The aqueduct right-of-way has received the usual care by disposing of the brush, grass and weeds. All the structures have received minor repairs and have been painted.

#### PROTECTION OF THE WATER SUPPLY

The Water Division has continued to use all the facilities available to safeguard the purity of the water delivered to the consumers by employing a sanitary engineer and bacteriologist in charge of a trained force to enforce the Sanitary Rules and Regulations of the State Department of Public Health. This force was employed in caring for the chlorinators and ammoniators, the algae control and sanitary inspection on the watersheds of storage reservoirs and distribution reservoirs.

Work in the laboratories consisted of making 5,282 tests for bacteria and 1,707 biological tests from samples collected throughout the Storage and Distribution Systems, and 542 field tests for p<sup>H</sup>, dissolved oxygen, carbon dioxide and residual chlorine. All complaints from consumers in the water district were investigated and most of these were found to be on account of taste and odor, and due to local conditions. During the year, 112 special chemical samples were analyzed for the Metropolitan District Water Supply Commission.

The entire cost charged to the work of sterilization and purification of water supplies during the year 1939 was \$30,000.

*Wachusett and North Sudbury Watersheds.* Sanitary facilities were furnished and maintained by the Water Division for a large number of W.P.A. workmen employed throughout the year on fire prevention clearings on hurricane-felled trees. Portable can-privies were also provided for the regular labor force working on the watershed areas.

Forty-nine dwelling houses and three cow barns were erected on the Wachusett watershed during the year, and special attention was given those situated near watercourses.

Sanitary improvements were made at thirty premises on the Wachusett watershed during the year. The waste from one large dairy, which at times flowed directly into Gates Brook, West Boylston, was diverted, eliminating one of the worst sources of pollution on the watershed. The piggeries still continue to be a serious menace and there has been practically no change during the past year. Most of the owners of piggeries continue to be defiant and have little thought of the necessity of complying with the Sanitary Rules.

The new public sewer in Holden, now under construction, will eliminate some of the principal sources of pollution in this district.

On the North Sudbury watersheds, there were six dwelling houses and one school constructed outside of the sewered district of Marlborough. The drainage from the school is temporarily cared for by two large cesspools but will be connected later with the Framingham public sewer.

Regular and systematic inspection and examination were made of all premises having privately-owned or operated sanitary facilities and a more cooperative supervision of these privately-owned plants was undertaken, which resulted in improvement being made in the plants before the situation became serious.

A small amount of sewage from the Marlborough trunk sewer above Farm Road overflowed on to Mars Land Filter during the winter and early spring months. Sanitary improvements were made at thirteen premises during the year. Much of the pollution on the North Sudbury watersheds is contributed by the large number of cattle on the dairy farms and to the practice of spreading manure on the fields during the entire year.

Considerable time was spent on sanitary control work along the new Pressure Aqueduct and at the tunnel shafts now under construction by the Metropolitan District Water Supply Commission. Frequent check-ups were made on availability, location and maintenance of sanitary conveniences and treatment of drainage from working areas. Sedimentation basins were used at all the tunnel shafts and at other locations as needed to reduce the suspended matter in the drainage from excavations or working areas. Most of the effluents from these basins were chlorinated. Numerous samples were collected and tested to check the effectiveness of the treatment.

During the year, 30,800 pounds of copper sulphate at an approximate cost of \$1,325 were applied to the waters of Framingham Reservoir No. 3 and Sudbury Reservoir as an algacide to destroy microscopic organisms which include Conferva, Diatomaceae, Dinobryon, Synura, Uroglenopsis and Zygnema, and at the Sudbury Power Station to prevent seeding of the organisms in the Weston Reservoir.

*Lake Cochituate and South Sudbury Watersheds.* Most of the surface water from 700 acres along Pegan Brook and an interesting ditch in Natick was purified by filters before it flowed into the lake. During February and March, 41,117,000 gallons of water were wasted directly into Lake Cochituate from the Pegan Brook settling reservoir, most of which was treated with chlorine before it entered the lake, and during the first four months of the year 73,449,000 gallons of water were wasted directly from the intercepting ditch settling basin into the lake, most of which was treated with chlorine. No chlorine was used in the waste from either basin after April 22.

The Pumping Station was in operation on 207 days and 172,519,000 gallons of water were pumped on to the filter beds, equivalent to an average of 472,700



gallons per day for the entire year. The cost of operating the station and filter beds for labor, fuel, supplies and repairs was \$6,422.17, which is at the rate of \$37.23 per million gallons filtered.

On the Cochituate and South Sudbury watersheds, fewer sanitary inspections were made because these supplies were not used for consumption in the Metropolitan Water District.

Several houses were constructed on the South Sudbury watershed, most of which were located in the Town of Ashland. Boating being permitted on Lake Cochituate has encouraged the building of camps near the shore of the lake.

Satisfactory sanitary conveniences were provided and maintained by the manufacturer of the precast-concrete pressure pipe used on the construction of the new Pressure Aqueduct.

*Distribution Reservoirs.*....All the water drawn from the storage reservoirs for consumption in the Water District was sterilized before it was delivered to the Distribution System by being treated with ammonia and chlorine.

The entire Sudbury Aqueduct supply was treated in the aqueduct at Sherborn where a 150-pounds-per-day and a 300-pounds-per-day vacuum type chlorinator and a 100-pounds-per-day ammoniator were installed. The Weston Aqueduct supply is treated as the water leaves the Weston Reservoir where four 300-pounds-per-day vacuum type chlorinators and three 100-pounds-per-day ammoniators are installed in the screen chamber.

Portions of the water supply which had passed through open reservoirs after the primary sterilization were again sterilized with chlorine at the following places: Chestnut Hill Reservoir at Chestnut Hill Pumping Stations; Waban Hill Reservoir at the Gatehouse; Fisher Hill Reservoir at the Gatehouse, and Spot Pond Reservoir at the east Gatehouse and Pumping Station.

Anhydrous ammonia and chlorine were both used throughout the year. There were used 278,979 pounds of liquid chlorine and 70,244 pounds of anhydrous ammonia. At the east Gatehouse, Spot Pond, for low-service supply 3,692 gallons of sodium hypochlorite solution were used. During the year there were used at the Screen Chamber at Weston Reservoir 213,490 pounds of liquid chlorine, equivalent to 5.23 pounds per million gallons, and 40,824 pounds of anhydrous ammonia, equivalent to 1.28 pounds per million gallons.

During the year Spot Pond was treated twice with copper sulphate and the Fells and Bear Hill Reservoirs once to destroy organisms.

*Permits.* During the year, 4,262 written permits were issued to inhabitants of the Metropolitan Water District and of the towns in which certain Water Division storage reservoirs are located giving them the right to fish from the shore of the reservoirs under conditions specified in the permits. Of these permits, 1,045 were for fishing in the upper portion of the Wachusett Reservoir above Worcester Street, and the remainder were for fishing in Framingham Reservoir No. 2, Lake Cochituate and Lombard Mill Pond, from which no water was drawn for consumption.

#### CLINTON SEWAGE DISPOSAL WORKS

The works constructed under the provisions of Acts of 1898, Chapter 557, for disposing of the sewage of the Town of Clinton were operated daily throughout the year. The total cost of operating the station was \$3,329.88, which was \$6.21 per million gallons, equivalent to 12.3 cents per million foot gallons. The settling tanks, sludge beds and filter beds were used jointly throughout the year. Of the 536,535,000 gallons of sewage pumped to the filtration area, 315,098,000 gallons were applied to the twenty-five 1-acre sand filter beds and the balance or 221,437,000 gallons were passed through the settling tanks and sludge beds before entering the brook tributary to the Nashua River. The dosing of the sand filters was equivalent to 46,000 gallons per acre per day for 274 days on which the beds were used. The cost of filtration and maintenance of the intercepting sewer during 1939 was \$11,094.34, which was \$20.68 per million gallons of sewage disposed of.



## FORESTRY

In the Wachusett Section, about 10 acres of Water Works land near the open channel portion of the Wachusett Aqueduct in Southborough and Northborough were prepared for planting by cutting out all scrub and sprout growth.

The mature white pine trees, which partially screened the Clinton filtration area in Lancaster from view from nearby highways and which were felled during the Hurricane of September, 1938, were sold as felled. A total of 332,185 board feet of lumber was secured by the contractor who paid \$581.32 for the logs. Also, 29 cords of wood were sold at \$1.00 per cord, the purchaser doing his own cutting and the burning of slash.

Early in the year, a start was made clearing the hurricane-felled trees from slightly stretches of Water Works land for a width of about 100 feet back from the main highways and preparing these areas for planting. About 4 miles of frontage along the aqueduct and around the reservoir having an area of about 72 acres were cleared. This thorough manner of clearing the Water Works land was abandoned upon advice of the Federal W.P.A. Forest authorities and work similar to that being done by their forces as a fire prevention measure was adopted. Eighty-four acres along about 6 miles of highways around the reservoir and sixty-one acres some distance back from the highways yet close to buildings were worked in this manner.

There were cut and logged from this area 30,000 board feet of white pine lumber which was held for use in the Water Division, 210,000 board feet of white pine logs, 287 cords of white pine logs and 71 cords of pine wood sold for \$983.95.

Federal W.P.A. forces, varying from 20 to 200 men, have been engaged throughout the year on fire prevention clearings on Water Works land throughout the margins of the reservoir in Boylston and West Boylston. This work consisted of cutting the limbs from the trunks of hurricane-felled trees up to the height of a man and cutting all brush and undergrowth and piling it for burning at opportune times. The work was carried on principally for a width of about 100 feet along main highways around the reservoir for a width varying from 50 to 100 feet along the access roads and streams throughout the marginal land of the reservoir and in some scattered areas located reasonably close to buildings. This work extended along highways, access roads and streams for a distance of about 9 miles covering an area of about 170 acres.

There were planted about 25 acres of land bordering the open channel portion of the aqueduct in Northborough and Southborough, the margins of the reservoir in West Boylston and along the Quinapoxet River in Holden, using 25,925 four-year-old white pine transplants. About 60 acres of Water Works land bordering the main highways along the aqueduct and around the reservoir and which were cleared of hurricane-felled trees were planted with 49,625 four-year-old white pine transplants; also, 4,700 white pine transplants were used as fillers in previously planted lots.

The necessary care and attention was given the nurseries in the Wachusett, Sudbury and Distribution Sections in which there were about 30,000 transplants of pines, spruce and arbor-vitae.

During June and July, the pine plantings on the marginal lands around the reservoirs were inspected for pine-tree weevil and about 15,000 infested shoots were cut off and burned.

The trees and shrubbery on Water Works land which were infested with gypsy moths and saw-fly worms were sprayed with a solution of arsenate of lead mixture.

It was noted that mixed pine plantation on Ash Street, Weston, was infested with some kind of a borer which was new to our force. The United States Department of Agriculture, Bureau of Entomology and Plant Quarantine, was consulted. The borer was pronounced by its representative to be *Hylobius radicis* Buch and a treatment of paradichloro-benzene-cottonseed oil was prescribed. Observations were made about two months after treatment was applied which indicated that some of the young borers were destroyed so that with a continuance of this treatment the pest may eventually be eliminated.

The usual fire patrol service was maintained in all sections during the spring and fall seasons. Although the fire hazard was great, due to the presence of trees felled by the hurricane, very few fires occurred on Water Works land and all were extinguished without much property damage by our own forces assisted by the local fire departments.

The brush, grass and weeds were mown and burned and the hurricane-felled trees were cleared for a width of 15 to 45 feet from about 150 miles of marginal fire guard and forest roads.

The regular force was augmented with temporary men from the Civil Service list to assist with hurricane and flood damage restoration work. Large areas in the Wachusett and Sudbury sections of the hurricane-damaged trees remain to be cleared up and there is also a large area remaining in which the slash was piled to be burned when weather conditions are favorable.

Of the funds made available by the Legislature in 1938 (Chapter 507) for emergency work made necessary on account of damage by the hurricane and floods of September 21, 1938, to the property and to the woodlands on the watersheds which are owned by the Water Division, \$93,700.00 was spent to January 1, 1940, and the remainder \$6,300.00 was obligated.

HYDRO-ELECTRIC SERVICE

Under contract with the New England Power Company and the Boston Edison Company for the sale of electric energy generated at the Wachusett and Sudbury Dams, the Metropolitan Distrist Water Supply Commission was furnished after March 18 with 2,383,796 kilowatt hours of electric energy for the construction of the pressure tunnel in Southborough and the remainder of the electric energy developed, not required for Water Works use, was sold to the companies.

The generation and sale of electric energy as a by-product in connection with the operation of the Metropolitan Water Works was provided for in Acts of 1895, Chapter 488.

The hydro-electric power stations at the Wachusett Dam in Clinton and at the Sudbury Dam in Southborough are operated by the water drawn for consumption in the water district from the reservoirs above these dams. During the year, 15,119,680 kilowatt hours of electric energy were developed at the power stations.

The value of the energy delivered in 1939 at contract prices was \$92,681.76 and after deducting \$53,672.00, the expenditures charged to the operation of both stations and the Water Division transmission line, there was a profit of \$39,009.76.

Wachusett Dam Station

The power station was operated on 292 working days and one Sunday during the year, being idle on 10 days on account of water requirements and aqueduct repairs, and on all other Sundays and holidays.

The statistics are as follows:

|  |                |
|--|----------------|
| Total energy developed (kilowatt hours)                        | 9,779,400      |
| Energy used at power station and storage yard (kilowatt hours) | 33,012         |
| <hr/>  |                |
| Available energy (kilowatt hours)                              | 9,746,388      |
| Water used (gallons)   | 49,470,200,000 |
| Average head (feet)  | 90.72          |
| Energy developed per million foot gallons (kilowatt hours)     | 2.179          |
| Efficiency of station (per cent)                               | 69.34          |

## Credits:

|  |             |             |             |
|--|-------------|-------------|-------------|
| Energy sold New England Power Company and Boston Edison Company: |             |             |             |
| 7,894,885 kilowatt hours at \$0.00625                            | \$49,343.03 |             |             |
| Deduction of 2% as provided in contract:                         |             |             |             |
| 157,898 kilowatt hours at \$0.00625                              | 986.87      | \$48,356.16 |             |
| 51,515 kilowatt hours at \$0.003                                 | \$154.55    |             |             |
| Deduction of 2% as provided in contract:                         |             |             |             |
| 1,030 kilowatt hours at \$0.003                                  | 3.10        | 151.45      |             |
| Energy sold Metropolitan District Water Supply Commission:       |             |             |             |
| 1,591,038 kilowatt hours at \$0.00625                            |             | 9,943.98    |             |
| Energy furnished Clinton Sewerage Pumping Station:               |             |             |             |
| 208,950 kilowatt hours at \$0.00625                              |             | 1,305.94    |             |
|  |             |             | \$59,757.53 |
| Charges:   |             |             |             |
| Superintendence  | \$1,502.64  |             |             |
| Labor, operating station   | 9,153.20    |             |             |
| Repairs and supplies   | 431.03      |             |             |
| Transmission line repairs and supplies                           | 179.51      |             |             |
|  | \$11,266.38 |             |             |
| Taxes  | 5,550.00    |             |             |
| Administration, general supervision, interest and sinking fund   | 11,059.07   |             |             |
|  |             |             | 27,875.45   |
| Profit   |             |             | \$31,882.08 |
| Cost of available energy per thousand kilowatt hours             |             |             | \$2.860     |

*Sudbury Dam Station*

This station was operated 365 days during the year and the actual running time being 362 days, 20 hours and 33 minutes. While the station was out of service, water was by-passed under Unit No. 2 into the Weston Aqueduct and over the dam into Framingham Reservoir No. 3. There were drawn from the Sudbury Reservoir 53,924,200,000 gallons of water to generate electricity.

The statistics are as follows:

|  |                |
|--|----------------|
| Total energy developed (kilowatt hours)                    | 5,340,280      |
| Energy used at power station (kilowatt hours)              | 72,404         |
| Available energy (kilowatt hours)                          | 5,267,876      |
| Framingham Reservoir No. 3 service:                        |                |
| Water used (gallons)                                       | 12,873,300,000 |
| Average head (feet)  | 65.11          |
| Weston Aqueduct service:                                   |                |
| Water used (gallons)                                       | 41,794,800,000 |
| Average head (feet)  | 38.33          |
| Energy developed per million foot gallons (kilowatt hours) | 2.233          |
| Efficiency of station (per cent)                           | 71.1           |



## Credits:

Energy sold Boston Edison Company:

4,475,118 kilowatt hours at \$0.00625 . . . \$27,969.49

Energy sold Metropolitan District Water Supply Commission:

792,758 kilowatt hours at \$0.00625 . . . 4,954.74

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\$32,924.23

## Charges:

Superintendence . . . . . \$1,804.22

Labor, operating station . . . . . 14,877.37

Repairs and supplies . . . . . 582.95

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\$17,264.54

Taxes . . . . . 2,170.00

Administration, general supervision, interest and  
sinking fund . . . . . 6,362.01

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25,796.55

Profit . . . . . \$7,127.68

Cost of available energy per thousand kilowatt hours . . . . . \$4.897

## DISTRIBUTION PUMPING STATIONS

Pumping for consumption in the water district was done at six stations, two at Chestnut Hill and one each at Spot Pond, Arlington, Belmont and Hyde Park and all are operated by steam power except the electrically-operated station at Belmont. All the equipment is in first-class operating condition.

*Chestnut Hill Stations No. 1 and No. 2.* At Station No. 1, 2 vertical triple-expansion, 1 cross-compound and 2 steam turbine-driven centrifugal pumps with a rated capacity of 130 million gallons per day were used to supply the Southern High-service.

At Station No. 2, there were 4 vertical triple-expansion pumps with a rated capacity of 145 million gallons per day. One of these, a 40-million-gallon capacity pump, was used to supply the Southern High-service and the others were held in reserve to pump into the low-service system in case of interruption to gravity low-service supply mains.

Under Contract No. 84-M with the Green Fuel Economizer Co., Inc., of Boston, one economizer was installed in each station and placed in service at Station No. 1 on March 3 and at Station No. 2 on February 5.

One hundred and twenty-five feet of new lead cable were installed in the duct from the boiler room to the Distribution pipe yard office to replace the broken electric light cable.

Under Contract No. 91-M with the Green Fuel Economizer Co., Inc., of Boston, the second economizer in Station No. 2 was removed in December and at the end of the year the force was installing the foundation for the new economizer.

The oil tanks were cleaned and the fuel oil burning equipment was overhauled and other equipment was given the usual maintenance care.

*Spot Pond Station.* There were three pumping units in use at this station of 50 million gallons per day rated capacity, 1 vertical compound, 2 vertical triple-expansion and 1 horizontal cross-compound, all used to pump water for the Northern High-service district.

Under Contract No. 91-M with the Green Fuel Economizer Co., Inc., of Boston, the old economizer was removed and many changes made preparatory to the installation of a new economizer.

Under Special Order a new boiler feed water heater was received in December from the Starkweather Engineering Co. of Boston and placed on a

concrete foundation in the pump room basement. This heater will be installed by our regular employees.

The dynamo engine and the Pelton water wheel generator and ash hoist were overhauled and repaired and many improvements and repairs were made to boilers and pumping engines.

*Arlington Station.* The three pumping units in this station, 2 horizontal cross-compound and 1 steam turbine-driven centrifugal of a rated capacity of 8 million gallons per day, were used to supply the Northern Extra High-service. Only the usual maintenance repairs to engines, pumps and boilers were required during the year.

*Hyde Park Station.* The 2 horizontal cross-compound units installed in this station with a rated capacity of 6 million gallons per day were used to supply the Southern Extra High-service.

The air compressor, hydraulic elevator and lighting engine were overhauled and repaired. Only maintenance upkeep was required on the boilers and pumping units.

*Belmont Station.* The 2 electric motor-driven centrifugal units, 6 million gallons per day rated capacity installed in this station, were used to supply the Intermediate High-service. A small section of Arlington was supplied from this service beginning May 8. Only minor repairs were made to the solenoid switch contacts, and the relays and float switch. The station efficiency was about 75 per cent based on 497,489,000 gallons of water pumped, using 295,000 kilowatt hours.

*Summary.* At the five stations, which were operated by steam power, 23,400,878,434 gallons of water were pumped during 1939. This is 1,150,112,794 gallons more than were pumped in 1938. The quantity pumped at the two stations at Chestnut Hill for the Southern High-service district was 17,247,053,876 gallons and of this 624,079,166 gallons were repumped at Hyde Park Station for the Southern Extra High-service.

At the Spot Pond Station, 4,749,738,854 gallons were pumped for the Northern High-service and at the Arlington Station 778,691,296 gallons were pumped for the Northern Extra High-service.

During the year, 8,643,831 pounds of bituminous coal, 752,369 pounds of anthracite screenings and 1,297,515 gallons of Bunker C fuel oil were burned at the five stations operated by steam power.

### DISTRIBUTION RESERVOIRS

The locations, elevations and capacities of the distribution reservoirs of the Metropolitan Water Works are shown by the following table:

| DISTRIBUTION RESERVOIRS AND LOCATIONS                                     | Elevation of High Water <sup>1</sup> | Capacity in Gallons |
|---|--------------------------------------|---------------------|
| Low Service:  |                                      |                     |
| Spot Pond, Stoneham and Medford . . . . .                                 | 163.00                               | 1,791,700,000       |
| Chestnut Hill Reservoir, Brighton district of Boston . . . . .            | 134.00                               | 300,000,000         |
| Weston Reservoir, Weston . . . . .  | 200.00                               | 200,000,000         |
| Mystic Reservoir, Medford . . . . .                                       | 157.00                               | 26,200,000          |
| Northern High Service:  |                                      |                     |
| Fells Reservoir, Stoneham . . . . .                                       | 271.00                               | 41,400,000          |
| Bear Hill Reservoir, Stoneham . . . . .                                   | 300.00                               | 2,450,000           |
| Northern Extra High Service:  |                                      |                     |
| Arlington Reservoir, steel tank, Arlington . . . . .                      | 442.50                               | 2,000,000           |
| Southern High Service:  |                                      |                     |
| Fisher Hill Reservoir, Brookline . . . . .                                | 251.00                               | 15,500,000          |
| Waban Hill Reservoir, Newton . . . . .                                    | 264.50                               | 13,500,000          |
| Forbes Hill Reservoir, Quincy . . . . .                                   | 192.00                               | 5,100,000           |
| Forbes Hill Standpipe, Quincy . . . . .                                   | 251.00                               | 330,000             |
| Intermediate High Service:  |                                      |                     |
| Arlington Covered Reservoir . . . . .                                     | 320.00                               | 2,000,000           |
| Southern Extra High Service:  |                                      |                     |
| Bellevue Reservoir, steel tank, West Roxbury district of Boston . . . . . | 375.00                               | 2,500,000           |
| Total . . . . .   | -                                    | 2,402,680,000       |

<sup>1</sup>Elevation in feet above Boston City Base.



The Mystic and Forbes Hill reservoirs were kept full of water for emergency use but were not in actual service during the year.

Only the Bradlee Basin at Chestnut Hill Reservoir was in service throughout the year. The Lawrence Basin was kept full of water for emergency use.

All the other Distribution Reservoirs and standpipes were in regular service throughout the year.

#### DISTRIBUTION PIPE LINES AND STORAGE YARDS

*Low-service Pipe Lines.* A break occurred in the 60-inch main in the Pine Hill Section of the Parks Division near the Metropolitan Police Station on Fellsway West, Medford, on July 10. There was not much damage in the vicinity of the break, which was in the wooded grounds, but the sidewalk and street surface of the Parkway were damaged to a slight extent. In the vicinity of Webster Street and Woodrow Avenue, Medford, where Gravelly Brook was unable to care for the sudden extra flow of water, the banks were overflowed and considerable damage was done to private property. Many basements were flooded, which were unwatered and cleaned, and everything that could be repaired by the maintenance force was removed to the shops, repaired and returned as soon as possible. The main was repaired and placed in service on July 17. The cost of repairing the break was \$2,739.32, including \$914.00 paid for damage to personal property.

Considerable time was spent protecting the water mains where the new Metropolitan Relief Sewer was being installed under mains in Everett and Chelsea.

Contract No. 83-M with the M. & R. Construction Company of Boston for rebuilding timber bulkhead at Chelsea Creek Crossing was begun in 1938 and completed March 31, 1939, at a cost of \$2,955.50.

Contracts were made for replacement of pipe bridges over the Boston and Maine Railroad at Webster Avenue and Walnut Street, Somerville, and College Avenue in Medford. All these contracts require that the old structures be removed and new bridges installed. The work of removing the existing pipes in the old structures and reinstalling the same in the new structures is to be done by the maintenance force. Most of the work done by the contractors during the year was fabricating the new structures in their own shops.

Contract No. 88-M with the Groisser and Shlager Iron Works of Somerville was for reconstructing pipe bridge over Boston and Maine Railroad at Walnut Street, Somerville. Basis of award, \$2,490.

Contract No. 89-M with the Groisser and Shlager Iron Works of Somerville was for reconstructing pipe bridge over Boston and Maine Railroad at College Avenue, Medford. Basis of award, \$2,585.

Contract No. 94-M with the West End Iron Works of Cambridge was for reconstructing pipe bridge over Boston and Maine Railroad at Webster Avenue, Somerville. Basis of award, \$3,174.

Contract No. 92-M with the M. & R. Construction Company of Boston was for the rebuilding of timber guard around the tunnel shaft on the East Boston side of Chelsea Creek, installing dolphins and filling over the 24-inch pipes near Condor Street, East Boston. The basis of award was \$4,130 and at the end of the year 60% of this work was completed.

The pipe covering insulation on the 30-inch steel pipe over the Boston and Maine Railroad at Newton Street, Waltham, was renewed and the pipe box over the Boston and Maine Railroad at Massachusetts Avenue in Cambridge was painted.

*Northern High-service Pipe Lines.* The 24-inch main in Hutchinson Street, Revere, was lowered to permit a concrete pipe storm drain to be laid by the City of Revere.

The 20-inch main in Ocean Avenue, Revere, was tapped for a connection to supply the new sanitary built by the Parks Division.

The 16-inch main in Beach Street at the corner of Winthrop Avenue, Revere, was relaid on account of settlement.



In Squire Road, Revere, the 30-inch steel main was repaired by welding 12 small holes which were probably caused by electrolysis. A survey of this area was made but no stray electrical currents were located and it is assumed that the damage was done before the electric street railway was abandoned in this section.

The pipe box on the shelf attached to the Fox Hill Bridge at the Saugus River, Saugus and Lynn, which was in very poor condition, was removed and the 16-inch main was insulated. This work was done under Contract No. 93-M by the National Engineering and Contracting Co. of Boston for \$2,186.67. Work was completed December 16, 1939.

*Intermediate High-service Pipe Lines.* The metered connection with Arlington in Eastern Avenue, which was installed in 1938, was placed in service May 8, 1939. This service supplies only a small section of Arlington, which formerly received a supply from the Northern Extra High-service, as it was found impossible to supply a larger area until additions are laid in the local system.

*Southern High-service Pipe Lines.* All the connections were made between the 36-inch cast-iron main and the new 36-inch steel main by the maintenance force, and the new main in Morton Street was placed in service on November 10 from Canterbury Street to Sanford Street, duplicating the existing main and reinforcing the supply to the Dorchester District of Boston, Milton and Quincy.

*Breaks and Leaks in Pipe Lines.* One break and thirty-eight leaks occurred in the mains of the Distribution System during the year. These were repaired at a cost of \$2,739.92 for the breaks, including damages, and \$3,725.20 for the leaks. Of the 38 leaks, 10 were from defective wooden insulation joints, 12 at one location on 30-inch steel main, and the remaining 16 were from lead joints.

*Recording Pressure Gages.* Pressure gages were maintained at 40 locations on the Distribution System and tables in the Appendix show the hydraulic grade maintained in the various services at 18 stations, as determined by the recording charts.

*Regulating Valves.* There were 9 pressure regulating valves connected with the Distribution System, 7 of which were in active service for reducing pressure of water supplied to Revere, Swampscott and Winthrop. The others were kept in good condition for emergency use.

*Glenwood and Chestnut Hill Yards.* These yards were maintained as offices and headquarters for the Northern and Southern districts of the Distribution Section. Auto trucks equipped with gate-operating attachments were maintained at garages and men were kept on duty day and night ready to operate them in case of emergency. A third auto truck, properly equipped, was also maintained at the Mystic Shops in Somerville for emergency service.

Pipe, specials and other materials and supplies required for the maintenance and operation of the pipe lines and distribution reservoirs were kept on hand at the Glenwood Yard in Medford and the Chestnut Hill Yard in Brighton.

#### WATER DISTRICTS SUPPLIED

The Metropolitan Water District includes 20 cities and towns, of which 18 received their entire supply from the Metropolitan Works in 1939.

*Measurement of Water to Municipalities.* The water was delivered to the local systems through 79 Venturi meters varying in size from six to sixty inches in diameter and connected with 72 meter registers. In addition to the Venturi meters, there were 13 detector meters and 2 disc meters measuring water supplied to the District where the consumption was too small to be

measured by a Venturi meter. Connected with the works, there were also 19 Venturi meters and registers located at pumping stations, on supply lines and cross-connections for use in checking quantities delivered to districts.

*Consumption of Water.* The consumption of water in the 18 municipalities supplied entirely from the Metropolitan Works during the year was 49,416,-593,000 gallons, equivalent to a daily average of 135,387,900 gallons or 92 gallons per capita for an estimated population of 1,475,730.

There was an increase in consumption in all the municipalities supplied except in two towns. The increase in the district supplied was 5,207,200 gallons per day, equivalent to about 3.5 gallons per capita.

The consumption for the Town of Brookline was 1,800,993,000 gallons divided into two services, the High-service 1,363,744,000 gallons and the Extra High-service 437,249,000 gallons, equivalent to 4,934,200 gallons per day or 93 gallons per capita. There were 163,641,000 gallons supplied Brookline from the Metropolitan Works of which 132,424,000 gallons were delivered to the High-service and 31,217,000 gallons delivered to the Brookline Booster Station to be pumped for the Extra High-service.

The City of Newton was furnished with 69,236,000 gallons of water from the Metropolitan High-service Works of which the city was entitled to 13,500,000 gallons free of charge under the agreement made in 1900.

The average daily consumption of water in each of the municipalities in the Metropolitan Water District during 1938 and 1939 is as follows:

|                         | Estimated<br>Popula-<br>tion, 1939 | AVERAGE DAILY CONSUMPTION |                       |             |                       |                           |
|-------------------------|------------------------------------|---------------------------|-----------------------|-------------|-----------------------|---------------------------|
|                         |                                    | 1938                      |                       | 1939        |                       | Increase<br>in<br>Gallons |
|                         |                                    | Gallons                   | Gallons<br>per Capita | Gallons     | Gallons<br>per Capita |                           |
| Arlington . . . . .     | 40,860                             | 2,072,400                 | 51                    | 2,250,400   | 55                    | 178,000                   |
| Belmont . . . . .       | 27,740                             | 1,346,300                 | 50                    | 1,632,100   | 59                    | 285,800                   |
| Boston . . . . .        | 852,310                            | 88,391,900                | 105                   | 90,895,700  | 107                   | 2,503,800                 |
| Chelsea . . . . .       | 39,680                             | 3,083,900                 | 76                    | 3,422,100   | 86                    | 338,200                   |
| Everett . . . . .       | 46,110                             | 4,460,500                 | 96                    | 4,664,900   | 101                   | 204,400                   |
| Lexington . . . . .     | 12,080                             | 685,500                   | 58                    | 851,000     | 70                    | 165,500                   |
| Malden . . . . .        | 56,560                             | 4,069,900                 | 72                    | 4,162,700   | 74                    | 92,800                    |
| Medford . . . . .       | 63,080                             | 3,344,300                 | 53                    | 3,492,100   | 55                    | 147,800                   |
| Melrose . . . . .       | 25,300                             | 1,440,900                 | 57                    | 1,511,000   | 60                    | 70,100                    |
| Milton . . . . .        | 19,780                             | 994,100                   | 51                    | 1,059,600   | 54                    | 65,500                    |
| Nahant . . . . .        | 1,850                              | 188,000                   | 103                   | 177,800     | 96                    | 10,200 <sup>1</sup>       |
| Quincy . . . . .        | 81,580                             | 4,012,500                 | 50                    | 4,669,700   | 57                    | 657,200                   |
| Revere . . . . .        | 34,980                             | 2,161,200                 | 62                    | 2,181,400   | 62                    | 20,200                    |
| Somerville . . . . .    | 97,790                             | 9,146,600                 | 93                    | 9,259,800   | 95                    | 113,200                   |
| Stoneham . . . . .      | 11,580                             | 683,600                   | 60                    | 654,900     | 57                    | 28,700 <sup>1</sup>       |
| Swampscott . . . . .    | 10,600                             | 701,900                   | 66                    | 791,700     | 75                    | 89,800                    |
| Watertown . . . . .     | 36,710                             | 2,099,200                 | 57                    | 2,344,400   | 64                    | 245,200                   |
| Winthrop . . . . .      | 17,140                             | 1,298,000                 | 76                    | 1,366,600   | 80                    | 68,600                    |
| District Supplied . . . | 1,475,730                          | 130,180,700               | 89                    | 135,387,900 | 92                    | 5,207,200                 |
| Brookline . . . . .     | 53,000                             | 4,619,500                 | 88                    | 4,934,200   | 93                    | 314,700                   |
| Newton . . . . .        | 66,950                             | 4,604,200                 | 69                    | 5,118,200   | 76                    | 514,000                   |
| Total District . . . .  | 1,595,680                          | 139,404,400               | 88                    | 145,440,300 | 91                    | 6,035,900                 |

<sup>1</sup>Decrease.

The population, consumption of water and per cent of services metered in the Metropolitan Water District as supplied in 1939 and for the period from 1890 to 1939, inclusive, are shown graphically by the accompanying diagram.

The consumption by districts in 1939 as compared with 1938 is as follows:

|   | Gallons<br>per Day<br>1939 | INCREASE FROM 1938 |                 |
|---|----------------------------|--------------------|-----------------|
|   |                            | Gallons<br>per Day | Percent-<br>age |
| Low service district, embracing the low-service districts of Arlington, Belmont, Boston, Chelsea, Everett, Malden, Medford, Somerville and Watertown.   | 69,157,900                 | 2,293,000          | 3.43            |
| Southern high-service district, embracing Quincy, the high-service district of Boston, except East Boston, and portions of Milton and Watertown.  | 47,507,500                 | 1,736,200          | 3.79            |
| Intermediate high-service district, embracing portions of Arlington, Belmont and Watertown.   | 1,311,000                  | 246,000            | 23.10           |
| Northern high-service district, embracing Melrose, Nahant, Revere, Stoneham, Swampscott and Winthrop and the high-service districts of Chelsea, East Boston, Everett, Malden, Medford and Somerville. | 13,455,300                 | 551,500            | 4.27            |
| Southern extra high-service district, embracing the higher portions of Hyde Park, Milton and West Roxbury.  | 1,795,300                  | 158,500            | 9.68            |
| Northern extra high-service district, embracing Lexington and the higher portions of Arlington and Belmont.   | 2,160,900                  | 222,000            | 11.45           |
| District Supplied . . . . .   | 135,387,900                | 5,207,200          | 4.00            |
| Brookline and Newton . . . . .  | 10,052,400                 | 828,700            | 8.98            |
| Total District . . . . .  | 145,440,300                | 6,035,900          | 4.33            |

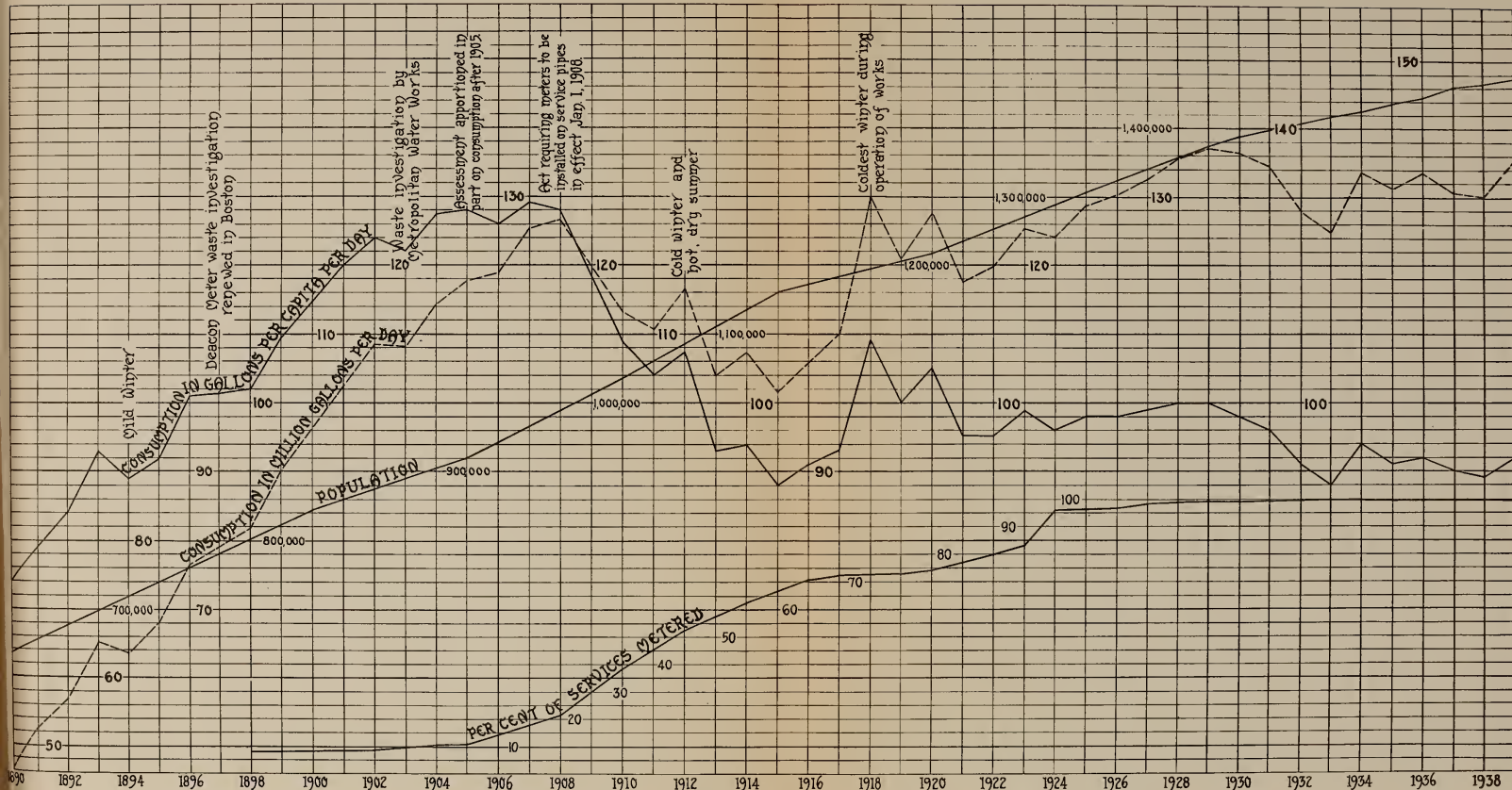
WATER FROM METROPOLITAN WATER WORKS SOURCES USED OUTSIDE OF THE METROPOLITAN WATER DISTRICT—1939

| PLACES WHERE WATER IS USED   | Total<br>Quantity<br>(Gallons) | Average<br>Quantity<br>(Gallons<br>per Day) | Amount<br>Charged |
|--|--------------------------------|---|-------------------|
| Town of Rutland . . . . .  | 85,900,500 <sup>a</sup>        | 235,300                                     | —                 |
| Town of Holden . . . . .   | 57,612,700 <sup>b</sup>        | 157,800                                     | —                 |
| Town of Clinton . . . . .  | 187,900,000                    | 789,000 <sup>c</sup>                        | —                 |
| Town of Lancaster . . . . .  | 37,200,000                     | 156,000 <sup>c</sup>                        | \$1,115.98        |
| Town of Sterling . . . . .   | 7,046,000 <sup>d</sup>         | 19,300                                      | —                 |
| Westborough State Hospital . . . . .                                     | 90,529,000                     | 248,000                                     | 2,715.87          |
| Town of Westborough . . . . .  | 76,000,000                     | 208,200                                     | —                 |
| Town of Southborough . . . . .   | 52,782,000                     | 144,600                                     | —                 |
| Town of Ashland . . . . .  | 147,000,000                    | 403,000                                     | —                 |
| Town of Hopkinton . . . . .  | 32,519,500                     | 89,100                                      | —                 |
| Town of Framingham . . . . .   | 510,573,000                    | 1,399,000                                   | 12,949.75         |
| Town of Natick . . . . .   | 376,930,000                    | 1,032,700                                   | —                 |
| United States Army Reservation at Peddock's Island in Hull . . . . .     | 433,000 <sup>e</sup>           | 1,200                                       | 51.78             |
| Portion of Town of Saugus . . . . .                                      | 3,881,000 <sup>f</sup>         | 10,600                                      | —                 |
| Metropolitan Parks, Middlesex Fells and Revere Beach Divisions . . . . . | 7,266,000                      | 19,900                                      | —                 |
| Walter E. Fernald State School and Metropolitan State Hospital . . . . . | 181,798,000 <sup>g</sup>       | 498,100                                     | 19,826.89         |

NOTES:—Water was used throughout the year in all places except as noted.  
The average daily use is figured on basis of 365 days.  
<sup>a</sup>All water was diverted from the watershed.  
<sup>b</sup>426,400 gallons diverted from Wachusett watershed.  
<sup>c</sup>The average daily use is figured on basis of 238 days actual use.  
<sup>d</sup>1,174,300 gallons diverted from Wachusett watershed.  
<sup>e</sup>Water supplied by the Commission through City of Quincy pipes, and by agreement revenue is divided in equal shares between the City and Commonwealth.  
<sup>f</sup>The City of Melrose supplies the water and pays the Commonwealth by an addition to its regular apportionment.  
<sup>g</sup>For fiscal year ending November 30.



POPULATION, CONSUMPTION OF WATER <sup>AND</sup> PER CENT OF SERVICES METERED  
 IN THE  
 METROPOLITAN WATER DISTRICT  
 AS SUPPLIED IN 1939  
 FROM 1890 TO 1939



Note: Estimated population and consumption per capita given, on diagrams published in previous annual reports are revised from time to time as regular census figures become available.



VIII. Metropolitan Sewerage Districts

AREAS AND POPULATIONS

The population of the districts, as given in the following table, are based on the census of 1935.

Table showing Ultimate Contributing Areas and Present Estimated Populations within the Metropolitan Sewerage Districts, as of December 31, 1939

| CITY OR TOWN                |                                | Area (Square Miles) | Estimated Population |         |
|-----------------------------|--------------------------------|---------------------|----------------------|---------|
| North Metropolitan District | Arlington . . . . .            | 4.73                | 41,120               |         |
|                             | Belmont . . . . .              | 3.78                | 28,910               |         |
|                             | Boston (portions of) . . . . . | 3.45                | 85,510               |         |
|                             | Cambridge . . . . .            | 5.43                | 122,740              |         |
|                             | Chelsea . . . . .              | 2.07                | 39,350               |         |
|                             | Everett . . . . .              | 2.92                | 45,980               |         |
|                             | Lexington . . . . .            | 15.98               | 12,220               |         |
|                             | Malden . . . . .               | 4.16                | 56,480               |         |
|                             | Medford . . . . .              | 6.11                | 63,260               |         |
|                             | Melrose . . . . .              | 3.81                | 25,410               |         |
|                             | Reading . . . . .              | 9.76                | 11,690               |         |
|                             | Revere . . . . .               | 5.55                | 34,940               |         |
|                             | Somerville . . . . .           | 3.96                | 97,460               |         |
|                             | Stoneham . . . . .             | 4.27                | 11,660               |         |
|                             | Wakefield . . . . .            | 6.36                | 16,680               |         |
|                             | Winchester . . . . .           | 5.31                | 14,060               |         |
|                             | Winthrop . . . . .             | 1.61                | 17,160               |         |
|                             | Woburn . . . . .               | 12.23               | 19,970               |         |
|                             |                                | 101.49              | 754,600              |         |
| South Metropolitan District | Boston (portions of) . . . . . | 24.96               | 342,760              |         |
|                             | Braintree. . . . .             | 13.44               | 18,600               |         |
|                             | Brookline . . . . .            | 5.35                | 53,300               |         |
|                             | Canton . . . . .               | 17.84               | 7,230                |         |
|                             | Dedham . . . . .               | 9.66                | 15,620               |         |
|                             | Milton . . . . .               | 9.59                | 19,960               |         |
|                             | Needham . . . . .              | 11.44               | 12,860               |         |
|                             | Newton . . . . .               | 16.00               | 67,040               |         |
|                             | Norwood . . . . .              | 10.16               | 16,130               |         |
|                             | Quincy . . . . .               | 11.46               | 82,100               |         |
|                             | Stoughton . . . . .            | 16.23               | 8,770                |         |
|                             | Walpole . . . . .              | 20.81               | 7,630                |         |
|                             | Waltham <sup>1</sup> . . . . . | 11.40               | 44,850               |         |
|                             | Watertown . . . . .            | 3.83                | 36,800               |         |
|                             | Wellesley . . . . .            | 9.89                | 15,410               |         |
|                             | Weymouth . . . . .             | 16.46               | 22,660               | 771,720 |
|                             |                                | 208.52              |                      |         |
| Totals                      |                                | 310.01              | 1,526,320            |         |

<sup>1</sup>Including 2911 in the Metropolitan State Hospital and the Middlesex County Tuberculosis Hospital authorized by Chapter 372 of the Acts of 1928 and Chapter 373 of the Acts of 1929.

Metropolitan Sewers

SEWERS PURCHASED AND CONSTRUCTED AND THEIR CONNECTIONS

During the year there have been 2.402 miles of Metropolitan sewers built within the sewerage districts, so that there are now 153.819 miles of Metropolitan sewers. Of this total, 9.642 miles of sewers, with the Quincy Pumping



Station, having been purchased from cities and towns of the districts. The remaining 144.177 miles of sewers and other works have been constructed by the Metropolitan Boards.

The locations, lengths and sizes of these sewers are given in appendix tables, together with other data referring to the public and special connections with the systems.

## Maintenance

### SCOPE OF WORK AND FORCE EMPLOYED

The maintenance of the Metropolitan Sewerage System includes the operation of 10 pumping stations, the Nut Island screen-house and 153.819 miles of Metropolitan sewers, receiving the discharge from 2193.36 miles of town and city sewers at 1503 points, together with the care and study of inverted siphons under streams and in the harbor.

At present the permanent maintenance force consists of 196 men, of whom 117 are employed on the North System and 79 on the South System. These are subdivided as follows: North Metropolitan System, 77 engineers and other employees in the pumping stations and 40 men, including foremen, on maintenance, care of sewer lines, buildings and grounds; South Metropolitan System, 53 engineers and other employees in the pumping stations and 26 men, including foremen, on maintenance, care of sewer lines, buildings and grounds.

The regular work of this department, in addition to the operation of the pumping stations, has consisted of routine work of cleaning and inspecting sewers and siphons, caring for tide gates, outfall sewers, regulators and overflows, measuring flow in sewers, inspection of connections to the Metropolitan sewers, and the care of pumping stations and other buildings, grounds and wharves.

In addition to these regular duties, other work has been done by the maintenance employees in this department as follows:

#### *Deer Island Pumping Station*

New cleats were put on the wharf so that the barges could tie up. The platform around the boilers was repaired. Repairs were made to the coal run and the mason made some repairs around the boilers.

The roof of the tenement house was repaired and two extra rooms were added to one of the tenements.

The float was repaired and launched.

The chimney of the station was pointed up and a cast-iron cap put on by an outside contractor.

#### *East Boston Pumping Station*

Numerous minor repairs and replacements were made to the grates, boilers, engines, pumps and auxiliary machinery by the pumping station force.

Two new vertical boilers were installed in place of Nos. 1 and 6, by a contractor.

The bottom of one of the screens was repaired by means of a new sheet iron plate and 57 new  $\frac{3}{4}$  inch iron rods, twelve feet long.

A new 8-inch gate valve was installed on the main steam line over No. 4 engine.

The salt water cooling system for the supply to the condensers was cleaned and repaired where necessary.

The smoke box and flues for Nos. 1, 3 and 5 boilers and the chimney on the east side of the station were cleaned.

General repairs were made to the Holly System with new piping and connections.

Repairs, including additional piping, were made to the heating systems in the carpenter shop and machine shop.

A door check was repaired and installed on the door of the screen room.

About 35 feet of 3½-inch cast-iron pipe were replaced by new pipe in the engine room to drain the roof.

### *Charlestown Pumping Station*

Roof gutters and conductor pipes were repaired and surface drains were cleaned and relaid.

The mason made some repairs around the boilers.

### *Alewife Brook Pumping Station*

A water line from the meter to the coal pocket was installed and the water line in the engine room and screen room was replaced.

The blow-off pipe for No. 2 boiler was renewed, the piston rod and valve stem on No. 2 engine were repacked, the valves on No. 3 engine and the piston rod and valve stems were repacked. New valve stems were installed on the high and low pressure of No. 3 engine.

A drip line was installed on the steam main of No. 3 engine.

A new discharge line was installed on the vacuum pump.

New sleeves and 16 new valves were put in Nos. 1 and 2 air pumps.

### *Reading Pumping Station*

The old paint on the outside woodwork of the building was burnt off and the building repainted.

### *North Sewer Lines*

The junk accumulated at Deer Island and East Boston was sent to the State's Prison.

The Chelsea Locker building was cleaned out and a ventilator was installed at the manhole outside the building.

A temporary field office was erected on Section 105 of the New Relief Sewer.

Several manholes in Winchester were raised and repaired. The Metropolitan Sewer at the Beggs & Cobb Tannery was cleaned. An odor of gasoline was detected in the North Metropolitan Sewer in Winchester and was traced to its source and the condition corrected.

A storm drain at Manchester Field in Winchester was blocked by the construction of Section 113 of the New Relief Sewer and has been extended and put in working order by the maintenance force.

Two six inch pumps were installed for the force main from the New Relief Sewer, Section 106, to the old North Metropolitan Sewer in Riverside Avenue, Medford.

An additional radiator for heating purposes was installed in the stock room of the East Boston Yard building and the water cooler was transferred downstairs from the carpenter shop and connected up with new brass pipe and fittings.

Early in November, the American Chain Link Fence Company completed a contract for erecting fences in Medford around the Commission's property on Canal Street, around the Meeting House Brook Siphon under Section 107, around the downstream or easterly head house of the Mystic River Siphon on Section 107 and in East Boston for replacing the wooden fence at the easterly end of the East Boston Pumping Station by a chain link fence. All these fences were needed to protect either the public or the property from dangers which might be incurred by trespass.

### *Ward Street Pumping Station*

Steam pipes in the roof gutters, designed to prevent the formation of ice were replaced early in the year and a few repairs were made to the slate covering of the roof and to the gutters themselves. Numerous minor repairs to the



building were made and considerable cleaning and painting of the interior walls and ceilings was done. Several square yards of the concrete floor of the screen house were renewed.

#### *Ward Street Yard*

On March 28, 1939, a fire broke out in the shed used as a carpenter shop and for the storage of cement, window-glass and similar supplies. The total damage amounted to about five hundred dollars. The fire was presumably caused by defective electric light wiring as it was first noticed in the upper northwest corner of the building.

A considerable amount of painting was done on the buildings and fences.

#### *West Street Yard, Hyde Park*

A considerable amount of painting was done on the buildings and fences.

#### *Quincy Pumping Station*

In connection with the proposed new pump and changes in the force mains, the blow-off manhole and the valve manhole at the upper end of the 30-inch force main, both of which had become covered, were made accessible and the valves put in working order.

#### *South Sewer Lines*

The wooden fence at the culvert under the sewer on Section 114 in Canton had become unsafe and was replaced.

A number of manholes on the Neponset Valley Sewer and the New Neponset Valley Sewer were raised, lowered or repaired and a large crack and break in Section 111 of the sewer in Milton was repaired by excavating and then pouring concrete around the outside of the structure.

Repairs and alterations in the superstructure of the power boat, located at Nut Island, were made in order to provide greater cabin space.

The old coal locker on the wharf at Nut Island became unsafe and being no longer in use was demolished.

### GASOLINE IN PUBLIC SEWERS

During the year the usual precautions have been maintained against the introduction of gasoline into the Metropolitan sewers. An inspector who covers both North and South Metropolitan Sewerage Districts has been employed. His duties are to see that all newly constructed garages or other gasoline-using establishments are supplied with a proper gasoline separator and also to see that these separators are kept in working condition.

During the year 1939 the number of permits issued by the municipalities in the Sewerage Districts for the construction of garages and other places where gasoline is used was 327. Each of these permits necessitates an examination by our inspector. Many of them are attended to through the mails and do not require a personal visit. Visits are made, however, to all locations where a connection is to be made with the public sewerage system and to such places as do not respond to the return postal cards sent out. During the year 54 such places were connected with the sewers that empty into the Metropolitan Systems. At the present time there are according to our records 1841 garages and other establishments where gasoline is used connected with the local sewerage systems which discharge into the Metropolitan sewers.

This system of inspection has improved the gasoline situation in regard to the danger to the sewers. Occasionally odors of gasoline are detected in the sewers. These are reported to the Department of Public Safety which alone has statutory control of the distribution and handling of gasoline in the Commonwealth.



## PUMPING STATIONS

### Capacities and Results

#### NORTH METROPOLITAN SYSTEM

##### *Deer Island Pumping Station*

At this station are four submerged centrifugal pumps with impeller wheels 8.25 feet in diameter, driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 100,000,000 gallons, with 19-foot lift.

Contract capacity of 3 pumps: 45,000,000 gallons each, with 19-foot lift.

Average coal duty for the year: 58,800,000 foot pounds.

Average quantity raised each day: 84,700,000 gallons.

Maximum quantity raised per day: 149,800,000 gallons.

##### *East Boston Pumping Station*

At this station are four submerged centrifugal pumps with impeller wheels 8.25 feet in diameter, driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 100,000,000 gallons, with 19-foot lift.

Contract capacity of 3 pumps: 45,000,000 gallons each, with 19-foot lift.

Average coal duty for the year: 55,600,000 foot pounds.

Average quantity raised each day: 82,700,000 gallons.

Maximum quantity raised per day: 147,800,000 gallons.

##### *Charlestown Pumping Station*

At this station are three submerged centrifugal pumps, two of them having impeller wheels 7.5 feet in diameter, the other 8.25 feet in diameter. They are driven by triple-expansion engines of the Reynolds-Corliss type.

Contract capacity of 1 pump: 60,000,000 gallons, with 8-foot lift.

Contract capacity of 2 pumps: 22,000,000 gallons each, with 11-foot lift.

Average coal duty for the year: 61,600,000 foot pounds.

Average quantity raised each day: 60,300,000 gallons.

Maximum quantity raised per day: 69,300,000 gallons.

##### *Alewife Brook Pumping Station*

The pumping units in this station consist of one Andrews pump driven by a compound marine engine, one Morris pump and Morris compound engine and a specially designed engine of vertical cross-compound type having between the cylinders a centrifugal pump rotating on a horizontal axis.

Contract capacity of the Andrews pump: 4,500,000 gallons, with 13-foot lift.

Contract capacity of Morris pump: 8,000,000 gallons, with 15-foot lift.

Contract capacity of the special pump: 13,000,000 gallons, with 13-foot lift.

Average coal duty for the year: 33,900,000 foot pounds.

Average quantity raised each day: 9,580,000 gallons.

Maximum quantity raised per day: 14,990,000 gallons.

##### *Reading Pumping Station*

At this station are two submerged centrifugal pumps, one of 2,500,000 gallons per 24 hours, and one of 4,000,000 gallons per 24 hours, capacity. These operate against a maximum head of 65 feet, and are actuated by vertical shafts directly connected with 75 and 100 horse-power motors.

Alternating current of 440 volts furnished by the town of Reading is used.

Average quantity pumped per 24 hours: 961,000 gallons.

Maximum quantity raised per day: 2,833,000 gallons.

## SOUTH METROPOLITAN SYSTEM

*Ward Street Pumping Station*

At this station are two vertical, triple-expansion pumping engines, of the Allis-Chalmers type, operating reciprocating pumps, the plungers of which are 48 inches in diameter with a 60-inch stroke and one 50,000,000-gallon centrifugal pumping unit actuated by a 500 H.P. Uniflow engine.

Contract capacity of 3 pumps: 50,000,000 gallons each, with 45-foot lift.

Average coal duty for the year: 76,500,000 foot pounds.

Average quantity raised each day: 33,200,000 gallons.

Maximum quantity raised per day: 50,600,000 gallons.

*Quincy Pumping Station*

The plant at this station consists of one Lawrence centrifugal pump driven by a Sturtevant compound condensing engine, one Morris centrifugal pump driven by a Morris compound condensing engine, and one DeLaval centrifugal pump driven by a Fitchburg vertical uniflow engine.

Contract capacity of 3 pumps: Lawrence centrifugal, 10,000,000 gallons; Morris centrifugal, 10,000,000 gallons; DeLaval centrifugal, 15,000,000 gallons.

Average coal duty for the year: 34,346,000 foot pounds.

Average quantity raised each day: 8,034,000 gallons.

Maximum quantity raised per day: 23,750,000 gallons.

*Nut Island Screen-house*

The plant at this house includes two sets of screens in duplicate actuated by small reversing engines of the Fitchburg type. Two vertical tubular boilers, 80 horsepower each, operate the engines, provide heat and light for the house, burn materials intercepted at the screens, and furnish power for the Hough's Neck pumping station.

Average daily quantity of sewage passing screens: 89,800,000 gallons.

Maximum quantity passing screens per day: 200,000,000 gallons.

*Hough's Neck Pumping Station*

At this station are two 6-inch submerged Lawrence centrifugal pumps with vertical shafts actuated by two Sturtevant direct-current motors.

The labor and electric energy for this station are supplied from the Nut Island Screen-house, and as used at present it does not materially increase the amount of coal used at the latter station.

Average quantity raised each day: 287,346 gallons.

Maximum quantity raised per day: 527,000 gallons.

*Squantum Pumping Station*

At this station are two pumping units each consisting of a 10-inch submerged DeLaval centrifugal pump with vertical shaft actuated by a Crocker-Wheeler 60 H.P. motor. Each unit is capable of lifting 4,000,000 gallons of sewage per 24 hours against a head of 46 feet.

The electric energy for this station is purchased from the Quincy Electric Light & Power Company.

Average quantity raised each day: 181,528 gallons.

*Braintree-Weymouth Pumping Station*

At this station are two pumping units consisting of DeLaval centrifugal pumps actuated by 150 H.P. direct connected Winton diesel engines, together with all accessories appertaining thereto. Each unit is capable of lifting 15,000,000 gallons of sewage per 24 hours against a head of 30 feet.

Average quantity raised per day: 1,370,000 gallons.



*Average Daily Volume of Sewage lifted at Each of the Ten Metropolitan Sewerage Pumping Stations during the Year, as compared with the Corresponding Volumes for the Previous Year*

| PUMPING STATION                     | AVERAGE DAILY PUMPAGE               |                                     |                             |           |
|-------------------------------------|-------------------------------------|-------------------------------------|-----------------------------|-----------|
|                                     | Jan. 1, 1939<br>to Dec. 31,<br>1939 | Jan. 1, 1938<br>to Dec. 31,<br>1938 | Increase during<br>the Year |           |
|                                     | Gallons                             | Gallons                             | Gallons                     | Per Cent. |
| Deer Island                         | 84,700,000                          | 89,600,000                          | 4,900,000*                  | 5.47*     |
| East Boston                         | 82,700,000                          | 87,600,000                          | 4,900,000*                  | 5.60*     |
| Charlestown                         | 60,300,000                          | 54,400,000                          | 5,900,000                   | 10.85     |
| Alewife Brook                       | 9,580,000                           | 9,270,000                           | 310,000                     | 3.34      |
| Reading                             | 961,000                             | 1,340,000                           | 379,000*                    | 28.28*    |
| Quincy                              | 8,034,000                           | 8,880,000                           | 846,000*                    | 9.53*     |
| Ward Street (actual gallons pumped) | 33,200,000                          | 40,150,000                          | 6,950,000*                  | 17.31*    |
| Hough's Neck                        | 287,346                             | 284,000                             | 3,346                       | 1.18      |
| Squantum                            | 181,528                             | 224,000                             | 42,472*                     | 18.96*    |
| Braintree-Weymouth                  | 1,370,000                           | 1,400,000                           | 30,000*                     | 2.14*     |

\*Decrease.

METROPOLITAN SEWERAGE OUTFALLS

The Metropolitan Sewerage Districts now have outfalls in Boston Harbor at five points, two of which may discharge sewage from the North District and three from the South District.

During the year the sewage of the North District has been discharged wholly through the outlet located near Deer Island light. The other outfall of this system is closed by a cast-iron cover which can easily be removed.

Of the outfalls of the South District, two extend for a distance exceeding one mile from the shore of Nut Island, Quincy, and the third one, called an emergency outlet, extends about 1,500 feet from the same. It was necessary to discharge sewage through this outfall 157 hours during the year.

During the year the average flow through the North Metropolitan District outfall at Deer Island has been 84,700,000 gallons of sewage per 24 hours, with a maximum rate of 149,800,000 gallons during the stormy period in March, 1939. The amount of sewage discharged from the North Metropolitan District averaged 121.8 gallons per day for each person, taking an estimated population of the District contributing sewage. If the sewers in this District were restricted to the admission of sewage proper only, this per capita amount would be considerably decreased.

In the South Metropolitan District an average of 89,800,000 gallons of sewage per 24 hours has passed through the screens at the Nut Island screen-house and has been discharged from the outfalls into the outer harbor. The maximum rate of discharge per day which occurred during a stormy period in April, 1939, was 200,000,000 gallons. The discharge of sewage through these outfalls represents the amount of sewage contributed by the South Metropolitan District, which was at the rate of 155.1 gallons per day per person of the estimated number contributing sewage in the District.

MATERIAL INTERCEPTED AT THE SCREENS

The material removed from the sewage at the screens of the North Metropolitan Sewerage Stations, consisting of rags, paper and other floating materials, has during the year amounted to 1626 cubic yards. This is equivalent to 1.42 cubic feet for each million gallons of sewage pumped at Deer Island.

The material removed from the sewage at the screens of the South Metropolitan Sewerage Stations amounted to 3546 cubic yards, equal to 2.92 cubic feet per million gallons of sewage delivered at the outfall works at Nut Island.

Studies of sewage flows in the Metropolitan sewers and siphons indicate that they are free from deposit.



## Construction

### NORTH METROPOLITAN SYSTEM

During the past year construction of the North Metropolitan Relief Sewer was actively prosecuted between its former temporary terminus near Cradock dam in Medford to a point in Chelsea near Chelsea Creek. Construction of the siphon under Chelsea Creek was started and was well under way at the close of the year. The force main in Medford was completed during the year. The following is a brief description of each section together with summaries of bids taken:

#### NORTH METROPOLITAN RELIEF SEWER

##### *Section 106-A*

The contractor for this section, Edward M. Matz, Inc., continued his construction work and on December 31, 1939, the section was 81.4 per cent completed.

##### *Section 105*

The contract for this section had been awarded and the contract had been approved by the Massachusetts Emergency Public Works Commission and the Federal Emergency Administration of Public Works in December, 1938. Construction work was started by the V. Barletta Company on February 6, 1939, and on December 31, 1939 was 71.3 per cent completed.

##### *Section 104*

A contract had been awarded for this section in December 1938 but the Massachusetts Emergency Public Works Commission subsequently voted to reject all bids without penalty to the bidders, whereupon the award was rescinded. The section was then divided into two parts designated as Sections 104-B and 104-A.

##### *Section 104-B*

This section is located in Everett and consists of about 776 linear feet of 11'-3" inside diameter concrete sewer in tunnel and about 1499 linear feet of 10'-6" inside diameter concrete sewer in tunnel, together with shafts and other appurtenances. Bids were opened on February 16, 1939 and awarded by the Metropolitan District Commission to the C. & R. Construction Company, Inc. with the approval of the Massachusetts Emergency Public Works Commission and the Federal Emergency Administration of Public Works. The contractor started work on March 15, 1939 and on December 31, 1939 the work was 61.5 per cent completed.

##### *Section 104-A*

This section is located in Everett and consists of about 2137 linear feet of 11'-3" by 11'-3" reinforced concrete sewer in open cut. Bids were opened on February 16, 1939 and the contract was awarded by the Metropolitan District Commission to Edward M. Matz, Inc. with the approval of the Massachusetts Emergency Public Works Commission and the Federal Emergency Administration of Public Works. The contractor started work on March 8, 1939 and completed the sewer construction on December 6, 1939.

##### *Sections 102 and 103*

Section 103 is located in Everett and Chelsea and consists of about 3675 linear feet of 11'-3" inside diameter sewer in tunnel, with shafts and other appurtenances.

Section 102 is located in Chelsea and consists of about 3670 linear feet of 11'-3" inside diameter sewer in tunnel and about 640 linear feet of 11'-3" by 11'-3" reinforced concrete sewer in open cut.

THE COMMONWEALTH OF MASSACHUSETTS  
METROPOLITAN DISTRICT COMMISSION  
SEWERAGE DIVISION

CANVASS OF BIDS — CHAIN LINK FENCES IN  
MEDFORD AND EAST BOSTON — SEPTEMBER 28, 1939

| BIDDERS<br>AND<br>ADDRESSES                                | MEETING HOUSE<br>BROOK<br>IN MEDFORD |                         | CANAL ST.<br>IN<br>MEDFORD                   | HEAD<br>HOUSE IN<br>MEDFORD                            | COAL POCKET<br>IN EAST BOSTON                        |                        | TOTAL<br>CONTRACT<br>PRICE |
|--|--------------------------------------|-------------------------|--|--|--|------------------------|----------------------------|
|  | 1                                    | 2                       | 1  | 1  | 1  | 2                      |                            |
|  | CHAIN LINK FENCE<br>160 LIN. FT.     | FAN GUARDS<br>2 OF THEM | CHAIN LINK FENCE<br>AND GATE<br>420 LIN. FT. | CHAIN LINK FENCE<br>AND REMOVABLE PANEL<br>60 LIN. FT. | CHAIN LINK FENCE<br>50 LIN. FT.<br>AND SWINGING GATE | FAN GUARD<br>1 OF THEM |                            |
| Security Fence Co.<br>140 Somerville Avenue<br>Somerville  | 2.53                                 | 27.50                   | 1.84   | 1.74   | 4.74   | 27.50                  | 1601.50                    |
|  | 404.80                               | 55.00                   | 772.80                                       | 104.40   | 237.00   | 27.50                  |                            |
| Anchor Post Fence Co.<br>138 Main Street<br>Cambridge      | 2.25                                 | 20.00                   | 1.69   | 1.95   | 3.75   | 20.00                  | 1434.30                    |
|  | 360.00                               | 40.00                   | 709.80                                       | 117.00   | 187.50   | 20.00                  |                            |
| W. A. Snow Company, Inc.<br>13 State Street<br>Boston      | 2.35                                 | 22.50                   | 1.58 <sup>8</sup> / <sub>10</sub>            | 1.45   | 4.56   | 23.00                  | 1425.12                    |
|  | 376.00                               | 45.00                   | 666.12                                       | 87.00  | 228.00   | 23.00                  |                            |
| American Chain Link Fence Co.<br>14 Ship Avenue<br>Medford | 1.93                                 | 17.00                   | 1.40   | 1.55   | 2.88   |                        | 1184.80                    |
|  | 308.80                               | 34.00                   | 588.00                                       | 93.00  | 144.00   | 17.00                  |                            |

I certify this to be a true and accurate summary of bids

JOSEPH P. DEVER,

*Chief Engineer of Sewerage Division.*

Contract awarded to the American Chain Link Fence Co.

SEWERAGE DIVISION  
METROPOLITAN DISTRICT COMMISSION  
THE COMMONWEALTH OF MASSACHUSETTS

Canvass of Bids — Chain Link Fencing in  
Bedford and East Boston — September 28, 1910

STYVALE 24 14052011



THE COMMONWEALTH OF MASSACHUSETTS  
METROPOLITAN DISTRICT COMMISSION

SEWERAGE DIVISION

CANVASS OF BIDS — SIPHON UNDER CHELSEA CREEK — SECTION 101 — MARCH 16, 1939

|  | 1  | 2   | 3   | 4  | 5  | 6   | 7   | 8   | 9  | 10                                       | 11                                 | 12                               | 13   | 14   | 15  | 16                             | 17                           | 18                               | 19                              | 20  | 21  | 22   | 23   | 24                                    | 25   | 26                          | 27   | Total<br>1 to 27             | 28                            |                                   |  |
|--|--|---|---|--|--|---|---|---|--|--|------------------------------------|----------------------------------|--|--|---|--------------------------------|------------------------------|----------------------------------|---------------------------------|---|---|--|--|---------------------------------------|--|-----------------------------|--|------------------------------|-------------------------------|-----------------------------------|--|
| BIDDERS<br>AND<br>ADDRESSES  | EARTH EXCAVATION<br>FOR SHAFTS<br>3,000 Cu. Yds. | EARTH EXCAVATION<br>FOR TUNNELS<br>6,500 Cu. Yds. | EARTH EXCAVATION<br>NOT IN SHAFTS OR<br>TUNNELS<br>6,700 Cu. Yds. | ROCK EXCAVATION FOR<br>ALL PARTS OF THE WORK<br>200 Cu. Yds. | CONCRETE OR BRICK<br>MASONRY REMOVED<br>200 Cu. Yds. | LUMBER AND SHEETING<br>USED AND LEFT IN PLACE<br>105 M.F.B.M. | LUMBER AND SHEETING<br>USED AND REMOVED<br>135 M.F.B.M. | STEEL SHEETING<br>USED AND LEFT IN PLACE<br>4,000 Sq. Ft. | MINOR DRAINS OTHER<br>THAN CAST-IRON<br>40 LINEAR FEET | CAST-IRON PIPE<br>AND FITTINGS<br>4 TONS | PIPE UNDERDRAIN<br>480 LINEAR FEET | GRAVEL REFILL<br>300 CUBIC YARDS | CONCRETE PLACED IN<br>TUNNEL<br>3,300 Cu. Yds. | CONCRETE PLACED IN<br>SHAFTS<br>1,350 Cu. Yds. | CONCRETE PLACED NOT IN<br>SHAFTS OR TUNNELS<br>1,500 Cu. Yds. | METAL REINFORCEMENT<br>60 TONS | BRICK MASONRY<br>40 Cu. Yds. | MISCELLANEOUS IRON<br>5,000 LBS. | WOOD PILES<br>6,500 LINEAR FEET | STRUCTURAL TIMBER<br>FOR PILE PLATFORM<br>10 M.F.B.M. | 60" DIAMETER REINFORCED<br>CONCRETE SEWER PIPE<br>3,000 LINEAR FEET | STREET PAVEMENTS<br>RESURFACED<br>300 Sq. Yds. | STEEL LINING AND<br>STRUCTURAL STEEL FOR<br>SHAFT CONSTRUCTION<br>165 TONS | STEEL IN TUNNEL<br>LINING<br>850 TONS | FURNISHING AND INSTALLING<br>TIDE GATES FOR CITY OF<br>BOSTON SEWER OUTLET<br>LUMP SUM | GROUT<br>21,000 BAGS CEMENT | PREPARATION AT SITE;<br>PUMPING; SUPPORTING,<br>MAINTAINING STRUCTURES, ETC.<br>LUMP SUM | TOTAL<br>ITEMS 1 TO 27, INC. | BOND<br>1 1/2% OF ABOVE TOTAL | ESTIMATED TOTAL<br>CONTRACT PRICE |  |
| C. & R. Construction Co.,<br>75 Bradeen St.,<br>Roslindale, Mass.  | 10.00  | 17.00   | 10.00   | 30.00  | 1.00   | 20.00   | 2.00  | 1.50  | 2.00   | 40.00                                    | 2.00                               | 1.50                             | 10.00  | 10.00  | 15.00   | 70.00                          | 30.00                        | .06                              | .40                             | 40.00   | 18.00   | 1.00   | 115.00   | 150.00                                |  | 1.00                        |  |                              |                               |                                   |  |
|  | 30,000.00  | 110,500.00  | 67,000.00   | 6,000.00   | 200.00   | 2,100.00  | 270.00  | 6,000.00  | 80.00  | 160.00                                   | 860.00                             | 450.00                           | 33,000.00                                      | 13,500.00                                      | 22,500.00   | 4,200.00                       | 1,200.00                     | 300.00                           | 2,600.00                        | 400.00  | 54,000.00   | 300.00   | 22,425.00  | 127,500.00                            | 20,000.00  | 24,000.00                   | 50,000.00  | 599,545.00                   | 8,993.18                      | 608,538.18                        |  |
| V. Barletta Co.,<br>10 Whipple Ave.,<br>Roslindale, Mass.          | 25.00  | 40.00   | 3.00  | 25.00  | 5.00   | 40.00   | 20.00   | 1.75  | 2.00   | 100.00                                   | 1.00                               | 2.00                             | 20.00  | 12.00  | 13.50   | 80.00                          | 50.00                        | .10                              | 1.00                            | 50.00   | 15.00   | 2.00   | 125.00   | 150.00                                |  | 1.00                        |  |                              |                               |                                   |  |
|  | 75,000.00  | 260,000.00  | 20,100.00   | 5,000.00   | 1,000.00   | 4,200.00  | 2,700.00  | 7,000.00  | 80.00  | 400.00                                   | 430.00                             | 600.00                           | 66,000.00                                      | 16,200.00                                      | 20,250.00   | 4,800.00                       | 2,000.00                     | 500.00                           | 6,500.00                        | 500.00  | 45,000.00   | 600.00   | 24,375.00  | 127,500.00                            | 1,500.00   | 24,000.00                   | 5,000.00   | 721,235.00                   | 10,818.52                     | 732,053.52                        |  |
| Minder Const. Corp.,<br>228 N. La Salle St.,<br>Chicago, Ill.      | 23.00  | 33.00   | 4.00  | 10.00  | 10.00  | 90.00   | 110.00  | 1.50  | 2.50   | 120.00                                   | 3.00                               | 3.00                             | 11.20  | 14.00  | 21.00   | 100.00                         | 35.00                        | .15                              | .60                             | 100.00  | 18.00   | 3.00   | 150.00   | 250.00                                |  | .80                         |  |                              |                               |                                   |  |
|  | 69,000.00  | 214,500.00  | 26,800.00   | 2,000.00   | 2,000.00   | 9,450.00  | 14,850.00   | 6,000.00  | 100.00   | 480.00                                   | 1,290.00                           | 900.00                           | 36,960.00                                      | 18,900.00                                      | 31,500.00   | 6,000.00                       | 1,400.00                     | 750.00                           | 3,900.00                        | 1,000.00  | 54,000.00   | 900.00   | 29,250.00  | 212,500.00                            | 1,000.00   | 19,200.00                   | 10,000.00  | 774,630.00                   | 11,619.45                     | 786,249.45                        |  |
| B. Perini & Sons Inc.,<br>Framingham, Mass.                        | 30.40  | 29.80   | 3.50  | 31.80  | 10.00  | 82.00   | 70.00   | 1.35  | 5.00   | 185.00                                   | 1.60                               | 1.50                             | 18.20  | 9.50   | 19.60   | 100.00                         | 50.00                        | .15                              | .55                             | 90.00   | 24.05   | 3.00   | 130.00   | 200.00                                |  | 1.00                        |  |                              |                               |                                   |  |
|  | 91,200.00  | 193,700.00  | 23,450.00   | 6,360.00   | 2,000.00   | 8,610.00  | 9,450.00  | 5,400.00  | 200.00   | 740.00                                   | 688.00                             | 450.00                           | 60,060.00                                      | 12,825.00                                      | 29,400.00   | 6,000.00                       | 2,000.00                     | 750.00                           | 3,575.00                        | 900.00  | 72,150.00   | 900.00   | 25,350.00  | 170,000.00                            | 1,708.00   | 24,000.00                   | 34,000.00  | 785,866.00                   | 11,787.99                     | 797,653.99                        |  |
| Silas Mason Co. Inc.,<br>500 5th Ave.,<br>New York, N. Y.          | 30.00  | 50.00   | 4.00  | 75.00  | 8.00   | 80.00   | 80.00   | 1.50  | 2.50   | 170.00                                   | 2.50                               | 3.00                             | 12.50  | 30.00  | 20.00   | 125.00                         | 30.00                        | .20                              | .60                             | 120.00  | 15.00   | 3.00   | 150.00   | 110.00                                |  | .65                         |  |                              |                               |                                   |  |
|  | 90,000.00  | 325,000.00  | 26,800.00   | 15,000.00  | 1,600.00   | 8,400.00  | 10,800.00   | 6,000.00  | 100.00   | 680.00                                   | 1,075.00                           | 900.00                           | 41,250.00                                      | 40,500.00                                      | 30,000.00   | 7,500.00                       | 1,200.00                     | 1,000.00                         | 3,900.00                        | 1,200.00  | 45,000.00   | 900.00   | 29,250.00  | 93,500.00                             | 1,250.00   | 15,600.00                   | 20,000.00  | 818,405.00                   | 12,276.07                     | 830,681.07                        |  |
| P. J. Carlin Const. Co.,<br>405 Lexington Ave.,<br>New York, N. Y. | 30.00  | 46.00   | 3.00  | 10.00  | 6.00   | 40.00   | 20.00   | 1.40  | 2.25   | 125.00                                   | 2.00                               | 1.00                             | 20.00  | 14.00  | 12.00   | 80.00                          | 40.00                        | .10                              | .60                             | 100.00  | 25.00   | 1.50   | 120.00   | 200.00                                |  | .80                         |  |                              |                               |                                   |  |
|  | 90,000.00  | 299,000.00  | 20,100.00   | 2,000.00   | 1,200.00   | 4,200.00  | 2,700.00  | 5,600.00  | 90.00  | 500.00                                   | 860.00                             | 300.00                           | 66,000.00                                      | 18,900.00                                      | 18,000.00   | 4,800.00                       | 1,600.00                     | 500.00                           | 3,900.00                        | 1,000.00  | 75,000.00   | 450.00   | 23,400.00  | 170,000.00                            | 3,000.00   | 19,200.00                   | 46,700.00  | 879,000.00                   | 13,185.00                     | 892,185.00                        |  |
| J. F. Fitzgerald Const. Co.,<br>214 Essex St.,<br>Boston, Mass.    | 25.00  | 56.00   | 4.00  | 20.00  | 10.00  | 35.00   | 25.00   | 1.75  | 3.00   | 100.00                                   | 2.50                               | 1.00                             | 15.00  | 12.00  | 17.00   | 85.00                          | 40.00                        | .10                              | .60                             | 60.00   | 20.00   | 1.50   | 124.00   | 220.00                                |  | .70                         |  |                              |                               |                                   |  |
|  | 75,000.00  | 364,000.00  | 26,800.00   | 4,000.00   | 2,000.00   | 3,675.00  | 3,375.00  | 7,000.00  | 120.00   | 400.00                                   | 1,075.00                           | 300.00                           | 49,500.00                                      | 16,200.00                                      | 25,500.00   | 5,100.00                       | 1,600.00                     | 500.00                           | 3,900.00                        | 600.00  | 60,000.00   | 450.00   | 24,180.00  | 187,000.00                            | 1,500.00   | 16,800.00                   | 4,000.00   | 884,575.00                   | 13,268.63                     | 897,843.63                        |  |

Contract awarded to the C. & R. Construction Co.

I certify this to be a true and accurate summary of bids

JOSEPH P. DEVER,

Chief Engineer of Sewerage Division.

# THE METROPOL

## SCHEDULE OF BIDS—SECTION 1

| BIDDER'S NAME<br>Address<br>City and State                | BID FOR<br>CONSTRUCTION OF<br>NEW CO. 2nd<br>Floor<br>Office Building | BID FOR<br>CONSTRUCTION OF<br>NEW CO. 1st<br>Floor<br>Office Building | BID FOR<br>CONSTRUCTION OF<br>NEW CO. 1st<br>Floor<br>Office Building | BID FOR<br>CONSTRUCTION OF<br>NEW CO. 1st<br>Floor<br>Office Building | BID FOR<br>CONSTRUCTION OF<br>NEW CO. 1st<br>Floor<br>Office Building | BID FOR<br>CONSTRUCTION OF<br>NEW CO. 1st<br>Floor<br>Office Building |
|---|---|---|---|---|---|---|
| J. B. Construction Co.<br>100 Broadway<br>New York, N. Y. | 17,000.00   | 20,000.00   | 22,000.00   | 24,000.00   | 26,000.00   | 28,000.00   |
| K. Construction Co.<br>100 Broadway<br>New York, N. Y.    | 18,000.00   | 21,000.00   | 23,000.00   | 25,000.00   | 27,000.00   | 29,000.00   |
| L. Construction Co.<br>100 Broadway<br>New York, N. Y.    | 19,000.00   | 22,000.00   | 24,000.00   | 26,000.00   | 28,000.00   | 30,000.00   |
| M. Construction Co.<br>100 Broadway<br>New York, N. Y.    | 20,000.00   | 23,000.00   | 25,000.00   | 27,000.00   | 29,000.00   | 31,000.00   |
| N. Construction Co.<br>100 Broadway<br>New York, N. Y.    | 21,000.00   | 24,000.00   | 26,000.00   | 28,000.00   | 30,000.00   | 32,000.00   |
| O. Construction Co.<br>100 Broadway<br>New York, N. Y.    | 22,000.00   | 25,000.00   | 27,000.00   | 29,000.00   | 31,000.00   | 33,000.00   |
| P. Construction Co.<br>100 Broadway<br>New York, N. Y.    | 23,000.00   | 26,000.00   | 28,000.00   | 30,000.00   | 32,000.00   | 34,000.00   |
| Q. Construction Co.<br>100 Broadway<br>New York, N. Y.    | 24,000.00   | 27,000.00   | 29,000.00   | 31,000.00   | 33,000.00   | 35,000.00   |
| R. Construction Co.<br>100 Broadway<br>New York, N. Y.    | 25,000.00   | 28,000.00   | 30,000.00   | 32,000.00   | 34,000.00   | 36,000.00   |

Contract awarded to the C. & R. Construction Co.



THE COMMONWEALTH OF MASSACHUSETTS  
METROPOLITAN DISTRICT COMMISSION  
SEWERAGE DIVISION

CANVASS OF BIDS — NORTH METROPOLITAN RELIEF SEWER — SECTIONS 102-103 COMBINED — FEBRUARY 23, 1939

| BIDDERS<br>AND<br>ADDRESSES  | 1  | 2  | 3   | 4   | 5  | 6  | 7                               | 8  | 9   | 10  | 11  | 12   | 13                              | 14  | 15  | 16  | 17  | 18  | 19                                       | 20   | 21   | 22  | 23  | 24   | 25                           | 26   | 27  | TOTAL<br>1 TO 27             | 28<br>BOND  | ESTIMATED<br>TOTAL<br>CON. PRICE  |
|--|--|--|---|---|--|--|---------------------------------|--|---|---|---|--|---------------------------------|---|---|---|---|---|--|--|--|---|---|--|------------------------------|--|---|------------------------------|---|-----------------------------------|
|  | EARTH EXCAVATION FOR<br>SHAFTS (EXCEPT SHAFT NEAR<br>STA. 6 + 40 OF SECTION 102)<br>3,400 Cu. Yds. | EARTH EXCAVATION ABOVE<br>GRADE FOR RELIEF SEWER<br>IN OPEN CUT<br>12,500 Cu. Yds. | EARTH EXCAVATION BELOW<br>GRADE FOR RELIEF SEWER<br>IN OPEN CUT<br>400 Cu. Yds. | EARTH EXCAVATION,<br>UNCLASSIFIED<br>700 Cu. Yds. | ROCK EXCAVATION FOR<br>ALL PARTS OF THE WORK<br>100 Cu. Yds. | CONCRETE OR BRICK<br>MASONRY REMOVED<br>450 Cu. Yds. | GRAVEL REFILL<br>2,400 Cu. Yds. | PIPE UNDERDRAIN IN<br>OPEN CUT<br>660 Lin. Ft. | LUMBER AND SHEETING<br>USED AND LEFT IN PLACE<br>105 M.F.B.M. | LUMBER AND SHEETING<br>USED AND REMOVED<br>305 M.F.B.M. | STEEL SHEETING USED AND<br>LEFT IN PLACE FOR RELIEF<br>SEWER IN OPEN CUT AND<br>FOR SHAFT NEAR STA. 6 + 40<br>OF SEC. 102<br>15,000 Sq. Ft. | CONCRETE PLACED EXCEPT<br>IN TUNNEL LINING<br>3,400 Cu. Yds. | METAL REINFORCEMENT<br>115 Tons | BRICK MASONRY,<br>INCLUDING IRON WORK<br>115 Cu. Yds. | STREET PAVEMENT<br>RESURFACED<br>2,100 Sq. Yds. | MINOR DRAINS OTHER THAN<br>CAST-IRON DRAINS<br>350 Lin. Ft. | 18" PIPE SEWER OR<br>DRAINS<br>100 Lin. Ft. | 24" PIPE SEWER OR<br>DRAIN<br>50 Lin. Ft. | CAST-IRON PIPE AND<br>FITTINGS<br>4 Tons | 11'-3" RELIEF SEWER IN<br>TUNNEL BASED ON FREE<br>AIR COST<br>7,280 Lin. Ft. | ADDITIONAL COST<br>TUNNEL EXCAVATED UNDER<br>COMPRESSION ABOVE<br>COST OF FREE AIR<br>7,280 Lin. Ft. | STRUCTURAL STEEL<br>RISER IN TUNNEL<br>1,230 Tons | STEEL IN SHAFT<br>CONSTRUCTION (EXCEPT<br>FOR SHAFT NEAR STA. 6 + 40<br>OF SECTION 102)<br>250 Tons | ADDITIONAL COST OF<br>COMPRESSED AIR IN SHAFT<br>CONSTRUCTION ABOVE FREE<br>AIR COST<br>4 SHAFTS | GROUT<br>100,000 Bags Cement | PUMPING, HANDLING AND<br>DISPOSAL OF WATER IN OR<br>ABOUT THE WORK<br>LUMP SUM | PREPARATION AT SITE,<br>MAINTENANCE AND PROTECTING<br>STRUCTURES, CLEANUP, ETC.<br>LUMP SUM | TOTAL<br>ITEMS 1 TO 27, INC. | ESTIMATED AMOUNT OF<br>BOND 1½% OF ABOVE<br>TOTAL | ESTIMATED TOTAL<br>CONTRACT PRICE |
| Silas Mason Co., Inc.,<br>500 Fifth Ave.,<br>New York, N. Y.           | 5.00   | 4.00   | 4.00  | 4.00  | 5.00   | 12.00  | 2.00                            | 2.00   | 60.00   | 54.00   | 1.20  | 14.00  | 100.00                          | 30.00   | 3.50  | 3.00  | 5.00  | 10.00                                     | 120.00                                   | 155.00   | 5.00   | 120.00  | 100.00  | 5.00   | .60                          |  | 4,960.00  | 1,604,000.00                 | 24,060.00   | 1,628,060.00                      |
| V. Barletta Co.,<br>10 Whipple Ave.,<br>Roslindale, Mass.              | 4.00   | 2.75   | 1.50  | 3.00  | 20.00  | 1.00   | 1.00                            | 1.50   | 40.00   | 1.00  | 1.25  | 10.00  | 70.00                           | 50.00   | 1.00  | 1.00  | 2.00  | 4.00                                      | 50.00                                    | 192.00   | 1.00   | 90.00   | 120.00  | 5.00   | .60                          |  | 2,000.00  | 1,739,380.00                 | 26,090.70   | 1,765,470.70                      |
| C. & R. Const. Co.,<br>75 Bradeen St.,<br>Roslindale, Mass.            | 1.00   | 3.50   | 1.00  | 2.00  | 1.00   | 1.00   | .40                             | 3.00   | 40.00   | 5.00  | .70   | 7.00   | 70.00                           | 32.00   | .50   | 2.00  | 3.00  | 4.00                                      | 40.00                                    | 215.00   | .25  | 57.00   | 57.00   | 5.00   | .60                          |  | 500.00  | 1,819,005.00                 | 27,285.08   | 1,846,290.08                      |
| B. Perini & Sons, Inc.,<br>Frammingham, Mass.                          | 1.00   | 3.00   | 3.00  | 3.00  | 10.00  | 4.00   | 1.40                            | 1.00   | 30.00   | 5.00  | 1.75  | 13.20  | 80.00                           | 30.00   | 1.80  | 1.00  | 3.00  | 4.00                                      | 100.00                                   | 193.25   | .50  | 105.00  | 120.00  | 50.00  | 1.00                         |  | 5,000.00  | 1,820,355.00                 | 27,305.33   | 1,847,660.33                      |
| Spencer, White & Prentiss, Inc.,<br>10 E. 40th St.,<br>New York, N. Y. | 5.00   | 2.50   | 3.00  | 4.00  | 9.00   | 10.00  | 3.00                            | 1.00   | 75.00   | 75.00   | 1.00  | 15.00  | 110.00                          | 40.00   | 4.00  | 1.50  | 6.00  | 9.00                                      | 150.00                                   | 222.00   | .50  | 110.00  | 120.00  | 500.00   | .90                          |  | 15,000.00   | 2,092,185.00                 | 31,382.77   | 2,123,567.77                      |
|  | 17,000.00  | 31,250.00  | 1,200.00  | 2,800.00  | 900.00   | 4,500.00   | 7,200.00                        | 660.00   | 7,875.00  | 22,875.00   | 15,000.00   | 51,000.00  | 12,650.00                       | 4,600.00  | 8,400.00  | 525.00  | 600.00                                      | 450.00                                    | 600.00                                   | 1,616,160.00   | 3,640.00   | 133,300.00  | 30,000.00   | 2,000.00   | 90,000.00                    | 10,000.00  |   |                              |   |                                   |

Contract awarded to the Silas Mason Co., Inc.

I certify this to be a true and accurate summary of bids  
JOSEPH P. DEVER,  
Chief Engineer of Sewerage Division.





THE COMMONWEALTH OF MASSACHUSETTS  
METROPOLITAN DISTRICT COMMISSION  
SEWERAGE DIVISION

CANVASS OF BIDS — NORTH METROPOLITAN RELIEF SEWER — SECTION 104A — FEBRUARY 16, 1939

| BIDDERS<br>AND<br>ADDRESSES                                      | 1  | 2   | 3  | 4                               | 5  | 6  | 7                                 | 8                               | 9                                    | 10  | 11  | 12  | 13  | 14   | 15  | 16                                       | 17   | 18  | 19   | 19A  | 19B   | 20  | 21                         | 22  | TOTAL<br>Ex. Item 20                 | 23  |  |  | 23  |  |
|--|--|---|--|---------------------------------|--|--|-----------------------------------|---------------------------------|--------------------------------------|---|---|---|---|--|---|--|--|---|--|--|---|---|----------------------------|---|--------------------------------------|---|--|--|---|--|
|  | EARTH EXCAVATION IN<br>TRENCH ABOVE GRADE<br>38,000 Cu. Yds. | EARTH EXCAVATION IN<br>TRENCH BELOW GRADE<br>700 Cu. Yds. | EARTH EXCAVATION<br>UNCLASSIFIED<br>900 Cu. Yds. | GRAVEL REFILL<br>9,000 Cu. Yds. | ROCK EXCAVATION FOR<br>ALL PAYS OF WORK<br>50 Cu. Yds. | CONCRETE OR BRICK<br>MASONRY REMOVED<br>100 Cu. Yds. | CONCRETE PLACED<br>5,700 Cu. Yds. | METAL REINFORCEMENT<br>260 TONS | PIPE UNDERDRAIN<br>2,100 LINEAR FEET | LUMBER AND SHEETING<br>USED AND LEFT IN PLACE<br>350 M.F.B.M. | LUMBER AND SHEETING<br>USED AND REMOVED<br>600 M.F.B.M. | STEEL SHEETING USED<br>AND LEFT IN PLACE<br>1,200 SQUARE FEET | MINOR DRAINS OTHER<br>THAN CAST-IRON<br>400 LINEAR FEET | 42" REINFORCED CONCRETE<br>CONVERT PIPE<br>230 LINEAR FEET | 24" REINFORCED CONCRETE<br>SEWER PIPE<br>50 LINEAR FEET | CAST-IRON PIPE AND<br>FITTINGS<br>2 TONS | BRICK MASONRY INCLUDING<br>IRON WORK<br>45 CUBIC YARDS | STREET PAVEMENT<br>RESURFACED<br>3,000 SQUARE YARDS | 11' 3" RELIEF SEWER IN<br>TUNNEL BASED ON FREE<br>AIR OPERATIONS<br>70 LINEAR FEET | ADDITIONAL COST OF<br>COMPRESSED AIR, TUNNEL<br>CONSTRUCTION NEAR<br>STA. 8 + 40 | STRUCTURAL STEEL Ribs<br>IN TUNNEL<br>25 TONS | 11'-3" x 11'-3" REINFORCED<br>CONCRETE SEWER IN OPEN<br>CUT STA. 8 + 00 TO 8 + 70<br>70 LINEAR FEET | GROUT<br>1,000 BAGS CEMENT | PREPARATION AT SITE,<br>CLEANUP, ETC.<br>LUMP SUM | TOTAL<br>ALL ITEMS EXCEPT<br>ITEM 20 | ESTIMATED AMOUNT FOR<br>BOND 1 1/2% OF ABOVE<br>TOTAL | ESTIMATED TOTAL CONTRACT<br>PRICE USING TUNNEL AT<br>RAILROAD CROSSING | TOTAL — ALL ITEMS EXCEPT<br>19, 19A, AND 19B | ESTIMATED AMOUNT FOR<br>BOND 1 1/2% OF ABOVE<br>TOTAL | ESTIMATED TOTAL CONTRACT<br>PRICE USING OPEN CUT AT<br>RAILROAD CROSSING |
| Edw. M. Matz Inc.,<br>101 Moraine St.,<br>Jamaica Plain, Mass.   | 1.40   | 4.00  | 2.00   | .40                             | 2.00   | 2.00   | 10.50                             | 75.00                           | 1.00                                 | 25.00   | 20.00   | 1.00  | 2.00  | 6.00   | 2.50  | 60.00                                    | 40.00  | .50   | 200.00   |  | 120.00  | 140.00  | .50                        |   |                                      |   |  |  |   |  |
| C. & R. Const. Co.,<br>67 Harrison St.,<br>Roslindale, Mass.     | 53,200.00  | 2,800.00  | 1,800.00   | 3,600.00                        | 100.00   | 200.00   | 59,850.00                         | 19,500.00                       | 2,100.00                             | 8,750.00  | 12,000.00   | 1,200.00  | 800.00  | 1,500.00   | 125.00  | 120.00                                   | 1,800.00   | 1,500.00  | 14,000.00  | 1,000.00   | 3,000.00                                      | 9,800.00  | 500.00                     | 1,000.00  | 190,445.00                           | 2,856.68  | 193,301.68   | 182,245.00                                   | 2,733.68  | 184,978.68   |
| A. Baruffaldi Co.,<br>52 Powderhouse Blvd.,<br>Somerville, Mass. | 2.50   | 1.00  | 2.00   | .40                             | 1.00   | 2.00   | 11.00                             | 70.00                           | 2.50                                 | 35.00   | 1.00  | .70   | 1.00  | 6.40   | 4.00  | 40.00                                    | 32.00  | .70   | 300.00   |  | 117.00  | 260.00  | .60                        |   |                                      |   |  |  |   |  |
| P. de Cristofaro<br>38 Glendower Rd.,<br>Roslindale, Mass.       | 95,000.00  | 700.00  | 1,800.00   | 3,600.00                        | 50.00  | 200.00   | 62,700.00                         | 18,200.00                       | 5,250.00                             | 12,250.00   | 600.00  | 840.00  | 400.00  | 1,600.00   | 200.00  | 80.00                                    | 1,440.00   | 2,100.00  | 21,000.00  | 100.00   | 2,925.00                                      | 18,200.00   | 600.00                     | 500.00  | 232,135.00                           | 3,482.03  | 235,617.03   | 226,310.00                                   | 3,394.65  | 229,704.65   |
| Coleman Bros. Inc.,<br>245 State St.,<br>Boston, Mass.           | 2.50   | 2.00  | 1.50   | .60                             | 2.50   | 1.50   | 12.00                             | 65.00                           | 2.00                                 | 35.00   | 20.00   | .80   | .50   | 8.00   | 4.00  | 60.00                                    | 30.00  | .90   | 300.00   |  | 125.00  | 250.00  | .75                        |   |                                      |   |  |  |   |  |
| V. Barletta Co.,<br>10 Whipple Ave.,<br>Roslindale, Mass.        | 95,000.00  | 1,400.00  | 1,350.00   | 5,400.00                        | 125.00   | 150.00   | 68,400.00                         | 16,900.00                       | 4,200.00                             | 12,250.00   | 12,000.00   | 960.00  | 200.00  | 2,000.00   | 200.00  | 120.00                                   | 1,350.00   | 2,700.00  | 21,000.00  | 3,000.00   | 3,125.00                                      | 17,500.00   | 750.00                     | 1,000.00  | 253,580.00                           | 3,803.70  | 257,383.70   | 243,955.00                                   | 3,659.33  | 247,614.33   |
| L. P. Fitzgerald Const. Co.,<br>114 Essex St.,<br>Boston, Mass.  | 3.00   | 4.00  | 1.00   | 1.00                            | 5.00   | 15.00  | 13.00                             | 75.00                           | 2.00                                 | 35.00   | 5.00  | 1.25  | 2.00  | 6.00   | 5.00  | 100.00                                   | 35.00  | 1.00  | 250.00   |  | 100.00  | 150.00  | 1.00                       |   |                                      |   |  |  |   |  |
| Mariucci Bros.,<br>51 Ceylon St.,<br>Dorchester, Mass.           | 114,000.00   | 2,800.00  | 900.00   | 9,000.00                        | 250.00   | 1,500.00   | 74,100.00                         | 19,500.00                       | 4,200.00                             | 12,250.00   | 3,000.00  | 1,500.00  | 800.00  | 1,500.00   | 250.00  | 200.00                                   | 1,575.00   | 3,000.00  | 17,500.00  | 10,000.00  | 2,500.00                                      | 10,500.00   | 1,000.00                   | 3,000.00  | 284,325.00                           | 4,264.87  | 288,589.87   | 264,825.00                                   | 3,972.37  | 268,797.37   |
| V. J. Grande Co.,<br>100 Academy Hill Rd.,<br>Brighton, Mass.    | 3.00   | 2.00  | 3.00   | 1.00                            | 9.00   | 4.00   | 10.00                             | 70.00                           | 1.00                                 | 35.00   | 20.00   | 1.00  | 1.00  | 7.00   | 3.00  | 100.00                                   | 40.00  | 1.00  | 300.00   |  | 100.00  | 350.00  | 1.00                       |   |                                      |   |  |  |   |  |
|  | 114,000.00   | 1,400.00  | 2,700.00   | 9,000.00                        | 450.00   | 400.00   | 57,000.00                         | 18,200.00                       | 2,100.00                             | 12,250.00   | 12,000.00   | 1,200.00  | 400.00  | 1,750.00   | 150.00  | 200.00                                   | 1,800.00   | 3,000.00  | 21,000.00  | 2,000.00   | 2,500.00                                      | 24,500.00   | 1,000.00                   | 2,500.00  | 267,000.00                           | 4,005.00  | 271,005.00   | 266,000.00                                   | 3,990.00  | 269,990.00   |
|  | 2.65   | 3.00  | 1.00   | 1.00                            | 1.00   | 1.00   | 12.00                             | 75.00                           | 1.00                                 | 40.00   | 10.00   | 1.50  | 2.00  | 6.00   | 4.00  | 40.00                                    | 40.00  | 2.00  | 400.00   |  | 100.00  | 300.00  | .75                        |   |                                      |   |  |  |   |  |
|  | 100,700.00   | 2,100.00  | 900.00   | 9,000.00                        | 50.00  | 100.00   | 68,400.00                         | 19,500.00                       | 2,100.00                             | 14,000.00   | 6,000.00  | 1,800.00  | 800.00  | 1,500.00   | 200.00  | 80.00                                    | 1,800.00   | 6,000.00  | 28,000.00  | 15,000.00  | 2,500.00                                      | 21,000.00   | 750.00                     | 10,000.00   | 291,280.00                           | 4,369.20  | 295,649.20   | 266,780.00                                   | 4,001.70  | 270,781.70   |
|  | 3.80   | 4.00  | 5.00   | 1.15                            | 7.00   | 5.00   | 11.00                             | 75.00                           | 2.00                                 | 36.00   | 10.00   | 1.40  | 3.00  | 8.00   | 4.00  | 100.00                                   | 40.00  | 1.00  | 515.00   |  | 115.00  | 158.00  | 1.00                       |   |                                      |   |  |  |   |  |
|  | 144,400.00   | 2,800.00  | 4,500.00   | 10,350.00                       | 350.00   | 500.00   | 62,700.00                         | 19,560.00                       | 4,200.00                             | 12,600.00   | 6,000.00  | 1,680.00  | 1,200.00  | 2,000.00   | 200.00  | 200.00                                   | 1,800.00   | 3,000.00  | 36,050.00  | 25,000.00  | 2,875.00                                      | 11,060.00   | 1,000.00                   | 1,000.00  | 343,905.00                           | 5,158.58  | 349,063.58   | 291,040.00                                   | 4,365.60  | 295,405.60   |
|  | 3.20   | 4.50  | 2.00   | 1.00                            | 15.00  | 4.00   | 11.50                             | 60.00                           | 3.00                                 | 50.00   | 20.00   | 1.10  | 1.00  | 6.50   | 3.00  | 60.00                                    | 30.00  | 2.00  | 250.00   |  | 86.00   | 250.00  | 1.00                       |   |                                      |   |  |  |   |  |
|  | 121,600.00   | 3,150.00  | 1,800.00   | 9,000.00                        | 750.00   | 400.00   | 65,550.00                         | 15,600.00                       | 6,300.00                             | 17,500.00   | 12,000.00   | 1,320.00  | 400.00  | 1,625.00   | 150.00  | 120.00                                   | 1,350.00   | 6,000.00  | 17,500.00  | 100.00   | 2,150.00                                      | 17,500.00   | 1,000.00                   | 9,000.00  | 294,365.00                           | 4,415.48  | 298,780.48   | 292,115.00                                   | 4,381.73  | 296,496.73   |
|  | 3.00   | 3.00  | 2.00   | 1.00                            | 3.00   | 3.00   | "No bid"                          | 79.00                           | 1.50                                 | 45.00   | 15.00   | 1.00  | 2.00  | 8.00   | 4.00  | 75.00                                    | 45.00  | 1.50  | 315.00   |  | 130.00  | 230.00  | .90                        |   |                                      |   |  |  |   |  |
|  |  |   |  |                                 |  |  |                                   |                                 |                                      |   |   |   |   |  |   |  |  |   |  |  |   |   |                            |   |                                      |   | "Bid informal; price omitted for one item"                             |  |   |  |

Contract awarded to Edward M. Matz, Inc.

I certify this to be a true and accurate summary of bids

JOSEPH P. DEVER,

Chief Engineer of Sewerage Division.



Contract awarded to Edward M. Malt, Inc.



THE COMMONWEALTH OF MASSACHUSETTS  
METROPOLITAN DISTRICT COMMISSION  
SEWERAGE DIVISION

CANVASS OF BIDS — NORTH METROPOLITAN RELIEF SEWER — SECTION 104B — FEBRUARY 16, 1939

| BIDDERS<br>AND<br>ADDRESSES                                   | 1  | 2  | 3   | 4   | 5   | 6   | 7                              | 8   | 9                             | 10  | 11  | 12   | 13  | 14                                       | 15   | 16  | 17   | 18   | 19   | 20  | 21                          | 22   | 23  |                                  | 24   | TOTAL                             |
|---|--|--|---|---|---|---|--------------------------------|---|-------------------------------|---|---|--|---|--|--|---|--|--|--|---|-----------------------------|--|---|----------------------------------|--|-----------------------------------|
|   | EARTH EXCAVATION<br>FOR SHAFTS<br>1,100 Cu. Yds. | EARTH EXCAVATION NOT IN<br>SHAFTS OR TUNNELS<br>800 Cu. Yds. | STEEL IN SHAFT<br>CONSTRUCTION<br>85 TONS | LUMBER USED AND LEFT<br>IN PLACE<br>20 M.F.B.M. | LUMBER USED AND<br>REMOVED<br>30 M.F.B.M. | CONCRETE PLACED, EXCEPT<br>IN TUNNEL LINING<br>550 Cu. Yds. | METAL REINFORCEMENT<br>20 TONS | ADDITIONAL COST OF<br>COMPRESSED AIR IN<br>2 SHAFTS | GRAVEL RETILL<br>500 Cu. Yds. | ROCK EXCAVATION FOR<br>ALL PARTS OF WORK<br>30 Cu. Yds. | CONCRETE OR BRICK<br>MASONRY REMOVED<br>50 Cu. Yds. | BRICK MASONRY INCLUDING<br>IRON WORK AS SPECIFIED<br>30 Cu. Yds. | MINOR DRAINS OTHER<br>THAN CAST-IRON<br>150 LINEAR FEET | CAST IRON PIPE AND<br>FITTINGS<br>2 TONS | 30" VITRIFIED PIPE<br>DRAIN<br>150 LINEAR FEET | STREET PAYMENTS<br>RESURFACED<br>900 Sq. Yds. | RELIEF SEWER IN TUNNEL<br>10'-6" INSIDE DIAMETER<br>BASED ON FREE AIR<br>1,480 LINEAR FEET | RELIEF SEWER IN TUNNEL<br>11'-3" INSIDE DIAMETER<br>BASED ON FREE AIR<br>776 LINEAR FEET | ADDITIONAL COST OF<br>TUNNEL EXCAVATED UNDER<br>COMPRESSED AIR ABOVE<br>FREE AIR COST<br>2,256 LINEAR FEET | STRUCTURAL STEEL Ribs<br>IN TUNNELS<br>400 TONS | GROUT<br>30,000 BAGS CEMENT | FOR PUMPING, HANDLING<br>AND DISPOSAL OF WATER<br>ABOUT THE WORK<br>LUMP SUM | PREPARATION AT SITE,<br>PROTECTING STRUCTURES<br>CLEANING, ETC.<br>LUMP SUM | TOTAL ITEMS 1 TO 23<br>INCLUSIVE | BOND 1 1/2% OF<br>TOTAL OF ITEMS<br>1 TO 23, INCLUSIVE | ESTIMATED TOTAL<br>CONTRACT PRICE |
| C. & R. Const. Co.,<br>37 Harrison St.,<br>Roslindale, Mass.  | 1.00   | 1.00   | 90.00                                     | 50.00   | 5.00                                      | 11.00   | 70.00                          | 50.00   | .40                           | 1.00  | 1.00  | 32.00  | 1.00  | 40.00                                    | 3.90   | .50   | 179.00   | 201.00   | .50  | 117.00  | .60                         |  |   |                                  |  |                                   |
|   | 1,100.00   | 800.00   | 7,650.00                                  | 1,000.00  | 150.00                                    | 6,050.00  | 1,400.00                       | 100.00  | 200.00                        | 50.00   | 50.00   | 990.00   | 150.00  | 80.00                                    | 585.00   | 450.00  | 264,920.00   | 155,976.00   | 1,128.00   | 46,800.00                                       | 18,000.00                   | 500.00   | 100.00  | 508,199.00                       | 7,622.99   | 515,821.99                        |
| V. Barletta,<br>10 Whipple Ave.,<br>Roslindale, Mass.         | 5.00   | 2.00   | 120.00                                    | 40.00   | 10.00                                     | 8.00  | 50.00                          | 5.00  | 1.00                          | 1.00  | 4.00  | 40.00  | 1.00  | 60.00                                    | 3.00   | 2.00  | 190.00   | 220.00   | 1.00   | 60.00   | .75                         |  |   |                                  |  |                                   |
|   | 5,500.00   | 1,600.00   | 10,200.00                                 | 800.00  | 300.00                                    | 4,400.00  | 1,000.00                       | 10.00   | 500.00                        | 50.00   | 200.00  | 1,200.00   | 150.00  | 120.00                                   | 450.00   | 1,800.00                                      | 281,200.00   | 170,720.00   | 2,256.00   | 24,000.00                                       | 22,500.00                   | 500.00   | 500.00  | 529,956.00                       | 7,949.34   | 537,905.34                        |
| Silas Mason Co.,<br>500 5th Ave.,<br>New York, N. Y.          | 6.00   | 3.00   | 120.00                                    | 60.00   | 60.00                                     | 15.00   | 100.00                         | 1.00  | 3.00                          | 5.00  | 20.00   | 30.00  | 2.00  | 120.00                                   | 8.00   | 4.00  | 175.00   | 200.00   | 5.00   | 120.00  | .60                         |  |   |                                  |  |                                   |
|   | 6,600.00   | 2,400.00   | 10,200.00                                 | 1,200.00  | 1,800.00                                  | 8,250.00  | 2,000.00                       | 2.00  | 1,500.00                      | 250.00  | 1,000.00  | 900.00   | 300.00  | 240.00                                   | 1,200.00                                       | 3,600.00                                      | 259,000.00   | 155,200.00   | 11,280.00  | 48,000.00                                       | 18,000.00                   | 5,078.00   | 5,000.00  | 543,000.00                       | 8,145.00   | 551,145.00                        |
| V. J. Grande Co.,<br>100 Academy Hill Rd.,<br>Brighton, Mass. | 5.00   | 3.00   | 140.00                                    | 35.00   | 15.00                                     | 15.00   | 79.00                          | 1.00  | 1.00                          | 8.00  | 5.00  | 45.00  | 2.00  | 80.00                                    | 7.00   | 1.50  | 160.00   | 210.00   | 15.00  | 120.00  | .90                         |  |   |                                  |  |                                   |
|   | 5,500.00   | 2,400.00   | 11,900.00                                 | 700.00  | 450.00                                    | 8,250.00  | 1,580.00                       | 2.00  | 500.00                        | 400.00  | 250.00  | 1,350.00   | 300.00  | 160.00                                   | 1,050.00                                       | 1,350.00                                      | 236,800.00   | 162,960.00   | 33,840.00  | 48,000.00                                       | 27,000.00                   | 3,000.00   | 2,000.00  | 549,742.00                       | 3,246.13   | 557,988.13                        |
| B. Perini & Sons Inc.,<br>Framingham, Mass.                   | 5.00   | 2.50   | 120.00                                    | 30.00   | 10.00                                     | 14.00   | 100.00                         | 2,000.00  | 1.00                          | 10.00   | 10.00   | 30.00  | 3.00  | 90.00                                    | 4.50   | 2.00  | 245.00   | 270.00   | 2.00   | 115.00  | .70                         |  |   |                                  |  |                                   |
|   | 5,500.00   | 2,000.00   | 10,200.00                                 | 000.00  | 300.00                                    | 7,700.00  | 2,000.00                       | 4,000.00  | 500.00                        | 500.00  | 500.00  | 900.00   | 450.00  | 180.00                                   | 675.00   | 1,800.00                                      | 362,600.00   | 209,520.00   | 4,512.00   | 46,000.00                                       | 21,000.00                   | 2,000.00   | 2,500.00  | 685,937.00                       | 10,289.06  | 696,226.06                        |
| J. F. Fitzgerald Con. Co.,<br>214 Essex St.,<br>Boston, Mass. | 8.00   | 3.00   | 115.00                                    | 37.00   | 20.00                                     | 12.00   | 75.00                          | 24,000.00   | 1.20                          | 10.00   | 6.00  | 40.00  | 2.00  | 100.00                                   | .50  | 1.15  | 272.00   | 285.00   | 32.00  | 125.00  | 1.00                        |  |   |                                  |  |                                   |
|   | 8,800.00   | 2,400.00   | 9,775.00                                  | 740.00  | 600.00                                    | 6,000.00  | 1,500.00                       | 48,000.00   | 600.00                        | 500.00  | 300.00  | 1,200.00   | 300.00  | 200.00                                   | 75.00  | 1,035.00                                      | 402,560.00   | 221,160.00   | 72,192.00  | 50,000.00                                       | 30,000.00                   | 3,500.00   | 3,000.00  | 865,037.00                       | 12,975.56  | 878,012.56                        |

Contract awarded to the C. & R. Construction Co.

I certify this to be a true and accurate summary of bids

JOSEPH P. DEVER,

Chief Engineer of Sewerage Division.



Bids were opened on February 23, 1939 for Section 103 and Section 102 separately and for Sections 103 and 102 combined in one bid. The contract award was made by the Metropolitan District Commission to the bidder whose proposal totalled the lowest number of dollars, considering both sections, and the award was thereafter approved by the Massachusetts Emergency Public Works Commission and the Federal Emergency Administration of Public Works. The successful bidder was the Silas Mason Company, Inc. Construction work was started on March 20, 1939 and on December 31, 1939 was 59.3 per cent completed.

## SIPHON UNDER CHELSEA CREEK

### *Section 101*

The preliminary excavation contract with Edward M. Matz, Inc. was completed on February 6, 1939.

At the beginning of the year the Metropolitan District Commission had under advisement the bids of December 22, 1938 for the principal siphon contract. It was decided to reject all bids, to make additional borings, and to re-design the section and ask for new bids.

Bids for additional borings were received on January 12, 1939. The boring contract was awarded to the Raymond Concrete Pile Company and the work was completed by them about March 2, 1939.

The section as re-designed is located in Boston and Chelsea and consists of about 963 linear feet of tunnel of 14'-6" outside diameter containing reinforced concrete pipes encased in concrete; about 185 linear feet of 11'-3" by 11'-3" reinforced concrete sewer in open cut; about 85 linear feet of 9'-3" by 9'-3" reinforced concrete sewer in open cut; about 36 linear feet of 60" concrete sewer in open cut; together with shafts, headhouses and appurtenant work. Bids were received on March 16, 1939 and the contract was awarded by the Metropolitan District Commission to the C. & R. Construction Company, Inc. with the approval of the Massachusetts Emergency Public Works Commission and the Federal Emergency Administration of Public Works. Construction work was started on April 24, 1939 and on December 31, 1939 was 39.9 per cent completed.

## FORCE MAIN UNDER MYSTIC RIVER

The contractor, Domenick Zanni, continued his construction work and completed it on August 15, 1939. Our maintenance men installed gasoline-driven centrifugal pumps and operated them for the remainder of the bathing season so as to reduce nuisances in the Mystic River below Cradock Dam.

## PROPOSED ABERJONA RIVER SEWER

During the year surveys were started and substantially completed for construction of a Metropolitan sewer in Woburn in the valley of the Aberjona River, from a point on the North Metropolitan Relief Sewer to the Woburn-Reading boundary. Bids were taken for borings along the proposed sewer line, but in view of the uncertainty as to whether existing funds would be sufficient to insure completion of the sewer, the project was abandoned for the present.

## IX. Other Reports

Tables, statistics and financial statements relating to the several divisions are hereto appended.

Respectfully submitted,

EUGENE C. HULTMAN,  
*Metropolitan District Commissioner.*

February 29, 1940.



## APPENDIX No. 1

## FINANCIAL STATEMENT

of the

## METROPOLITAN DISTRICT COMMISSION

FOR THE YEAR ENDING NOVEMBER 30, 1939

|   | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|---|--|-----------------------------|------------------|-------------------------|
| Metropolitan Parks District                     |  |                             |                  |                         |
| Hurricane and Flood Damage:                     |  |                             |                  |                         |
| Chapter 507, Acts of 1938 . . . . .             | \$650,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 66,633.18                                  |                             |                  |                         |
|   |  | \$583,366.82                | \$502,634.03     | \$80,732.79             |
| Metropolitan Water District                     |  |                             |                  |                         |
| Hurricane and Flood Damage:                     |  |                             |                  |                         |
| Chapter 507, Acts of 1938 . . . . .             | \$100,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 1,848.23                                   |                             |                  |                         |
|   |  | \$98,151.77                 | \$93,613.52      | \$4,538.25              |
| <b>Construction</b>                             |  |                             |                  |                         |
| <b>PARKS DIVISION</b>                           |  |                             |                  |                         |
| Charles River Basin Improvements:               |  |                             |                  |                         |
| Chapter 371, Acts of 1929 . . . . .             | \$2,305,000.00                             |                             |                  |                         |
| Less Chapter 179, Acts of 1931 . . . . .        | 25,000.00                                  |                             |                  |                         |
|   | \$2,280,000.00                             |                             |                  |                         |
| Interest . . . . .                              | 129,110.90                                 |                             |                  |                         |
|   | \$2,409,110.90                             |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 2,128,504.34                               |                             |                  |                         |
|   |  | \$280,606.56                | \$16,809.52      | \$263,797.04            |
| Less amount transferred to Recreation Building: |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . . . .             |  |                             |                  | 100,000.00              |
|   |  |                             |                  | \$163,797.04            |
| Charles River Basin Improvement Fund:           |  |                             |                  |                         |
| Recreation Building:                            |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . . . .             | \$100,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 12,119.14                                  |                             |                  |                         |
|   |  | \$87,880.86                 | \$78,429.35      | \$9,451.51              |
| Metropolitan Parks Construction Fund:           |  |                             |                  |                         |
| Specials:                                       |  |                             |                  |                         |
| Bath House, Watertown:                          |  |                             |                  |                         |
| Chapter 331, Acts of 1936 . . . . .             |  |                             |                  |                         |
| Chapter 432, Acts of 1936 . . . . .             |  |                             |                  |                         |
| Construction and Incidentals . . . . .          | \$41,870.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 31,022.25                                  |                             |                  |                         |
|   |  | \$10,847.75                 | \$10,217.93      | \$629.82                |
| Beach . . . . .                                 | \$23,130.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 23,127.53                                  |                             |                  |                         |
|   |  | \$2.47                      | —                | \$2.47                  |
| Total, Bath House, Watertown:                   |  |                             |                  |                         |
| Chapter 331, Acts of 1936 . . . . .             | \$32,500.00                                |                             |                  |                         |
| Chapter 432, Acts of 1936 . . . . .             | 32,500.00                                  |                             |                  |                         |
|   | \$65,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 54,149.78                                  |                             |                  |                         |
|   |  | \$10,850.22                 | \$10,217.93      | \$632.29                |
| Additional Facilities — Ponkapoag Golf Course:  |  |                             |                  |                         |
| Chapter 234, Acts of 1937 . . . . .             | \$20,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 14,037.78                                  |                             |                  |                         |
|   |  | \$5,962.22                  | \$4,894.14       | \$1,068.08*             |
| Oak Island, Sanitary:                           |  |                             |                  |                         |
| Chapter 234, Acts of 1937 . . . . .             | \$12,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .             | 11,993.60                                  |                             |                  |                         |
|   |  | \$6.40                      | —                | \$6.40*                 |

\*Reverted.

Construction (Continued)

|  | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|--|--|-----------------------------|------------------|-------------------------|
| Parks Division (Continued)                 |  |                             |                  |                         |
| Metropolitan Parks Construction Fund,      |  |                             |                  |                         |
| Specials:                                  |  |                             |                  |                         |
| Radio Room:                                |  |                             |                  |                         |
| Chapter 234, Acts of 1937                  | \$5,000.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938                  |  | \$5,000.00                  | -                | \$5,000.00*             |
| Public Sanitary, Winthrop Shore            |  |                             |                  |                         |
| Reservation:                               |  |                             |                  |                         |
| Chapter 497, Acts of 1938                  | \$15,550.00                                |                             |                  |                         |
| Construction and Incidentals               |  |                             |                  |                         |
| Expended to Nov. 30, 1938                  |  | \$15,550.00                 |                  |                         |
| Reduction                                  |  | 3,050.00                    |                  |                         |
|  |  | \$12,500.00                 | \$9,425.56       | \$3,074.44              |
| Taking of Land                             | \$4,450.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938                  | 4,356.25                                   | \$93.75                     | \$50.00          | \$43.75                 |
| Unallocated                                |  | \$3,050.00                  | -                | \$3,050.00              |
| Total, Public Sanitary, Winthrop Shore     |  |                             |                  |                         |
| Reservation:                               |  |                             |                  |                         |
| Chapter 497, Acts of 1938                  | \$20,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938                  | 4,356.25                                   | \$15,643.75                 | \$9,475.56       | \$6,168.19              |
| Metropolitan Parks Construction Fund,      |  |                             |                  |                         |
| Boulevards:                                |  |                             |                  |                         |
| Specials:                                  |  |                             |                  |                         |
| Improvement of Land, Old Colony Parkway:   |  |                             |                  |                         |
| Chapter 497, Acts of 1935                  | \$30,000.00                                |                             |                  |                         |
| Incidentals                                |  |                             |                  |                         |
| Less amount transferred to                 |  |                             |                  |                         |
| Bath House                                 | 504.00                                     |                             |                  |                         |
|  | \$29,496.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938                  | 29,495.16                                  | \$ .84 (cr)                 | \$281.07         | \$281.91                |
| Bath House                                 | \$70,000.00                                |                             |                  |                         |
| Transferred from Incidentals               | 504.00                                     |                             |                  |                         |
|  | \$70,504.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938                  | 70,502.82                                  | \$1.18                      | -                | \$1.18                  |
| Total, Improvement of Land, Old Colony     |  |                             |                  |                         |
| Parkway:                                   |  |                             |                  |                         |
| Chapter 497, Acts of 1935                  | \$100,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938                  | 99,716.91                                  | \$283.09                    | -                | \$283.09*               |
| Reconstruction Mystic River Bridge,        |  |                             |                  |                         |
| Harvard Avenue, Medford:                   |  |                             |                  |                         |
| Chapter 445, Acts of 1937                  | \$52,500.00                                |                             |                  |                         |
| Received from City of Medford:             |  |                             |                  |                         |
| Chapter 432, Acts of 1937                  | 11,250.00                                  |                             |                  |                         |
| Received from Town of Arlington:           |  |                             |                  |                         |
| Chapter 432, Acts of 1937                  | 11,250.00                                  |                             |                  |                         |
|  | \$75,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938                  | 74,991.02                                  | \$8.98                      | -                | \$8.98*                 |
| Reconstruction Oak Island Bridge and       |  |                             |                  |                         |
| Road, Revere:                              |  |                             |                  |                         |
| Chapter 497, Acts of 1938                  | **\$67,400.00                              |                             |                  |                         |
| Expended to Nov. 30, 1938                  |  | \$67,400.00                 | -                | \$67,400.00             |
| Traffic Circle at West Roxbury Parkway     |  |                             |                  |                         |
| and Center Street:                         |  |                             |                  |                         |
| Chapter 497, Acts of 1938                  | \$60,000.00                                |                             |                  |                         |
| Transferred to Mass. State Project D-207   |  |                             |                  |                         |
| P.W.A. Docket No. 151OF                    | 59,950.00                                  | \$50.00                     |                  |                         |
| Transferred from Mass. State Project D-207 |  |                             |                  |                         |
| P.W.A. Docket No. 151OF                    |  | 1,500.00                    |                  |                         |
|  |  | \$1,550.00                  | \$597.00         | \$953.00                |

\* Reverted.  
\*\* \$50,000.00 transferred from Department of Public Works.

## Construction (Continued)

|   | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|---|--|-----------------------------|------------------|-------------------------|
| Parks Division (Continued)                |  |                             |                  |                         |
| Metropolitan Parks Construction Fund,     |  |                             |                  |                         |
| Boulevards:                               |  |                             |                  |                         |
| Specials (Continued)                      |  |                             |                  |                         |
| Underpass at Columbia Circle:             |  |                             |                  |                         |
| Chapter 497, Acts of 1938                 | \$65,000.00                                |                             |                  |                         |
| Transferred to Mass. State Project        |  |                             |                  |                         |
| D-206, P.W.A. Docket No. 1512F            | 64,900.00                                  |                             |                  |                         |
|   |  | \$100.00                    | -                | \$100.00                |
| Traffic Circle at West Roxbury Parkway    |  |                             |                  |                         |
| and Center Street:                        |  |                             |                  |                         |
| Mass. State Project D-207, P.W.A.         |  |                             |                  |                         |
| Docket No. 1510F:                         |  |                             |                  |                         |
| Chapter 497, Acts of 1938                 | \$59,950.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938                 | 174.65                                     |                             |                  |                         |
|   |  | \$59,775.35                 |                  |                         |
| Federal Grants                            |  | 38,150.00                   |                  |                         |
|   |  | \$97,925.35                 |                  |                         |
| Transferred to Traffic Circle at West     |  |                             |                  |                         |
| Roxbury Parkway and Center Street         |  |                             |                  |                         |
|   |  | 1,500.00                    |                  |                         |
|   |  | \$96,425.35                 | \$89,186.86      | \$7,238.49              |
| Underpass at Columbia Circle:             |  |                             |                  |                         |
| Mass. State Project D-206, P.W.A.         |  |                             |                  |                         |
| Docket No. 1512F:                         |  |                             |                  |                         |
| Chapter 497, Acts of 1938                 | \$64,900.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938                 | 104.95                                     |                             |                  |                         |
|   |  | \$64,795.05                 |                  |                         |
| Federal Grants                            |  | 33,909.33                   |                  |                         |
|   |  | \$98,704.38                 | \$88,523.67      | \$10,180.71             |
| Overpass and Traffic Circle, Cottage Farm |  |                             |                  |                         |
| Bridge:                                   |  |                             |                  |                         |
| Mass. State Project D-210, P.W.A.         |  |                             |                  |                         |
| Docket No. 1555F:                         |  |                             |                  |                         |
| Chapter 494, Acts of 1938                 | \$250,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938                 | 360.51                                     |                             |                  |                         |
|   |  | \$249,639.49                |                  |                         |
| Federal Grants                            |  | 148,283.94                  |                  |                         |
|   |  | \$397,923.43                | \$394,100.34     | \$3,823.09              |

## SEWERAGE DIVISION

|  |                |                |                |                |
|--|----------------|----------------|----------------|----------------|
| Metropolitan Sewerage Construction Fund, |                |                |                |                |
| North System:                            |                |                |                |                |
| Specials:                                |                |                |                |                |
| New Mystic Valley Main Sewer:            |                |                |                |                |
| Chapter 184, Acts of 1927                | \$450,000.00   |                |                |                |
| Chapter 381, Acts of 1931                | 20,482.25      |                |                |                |
|  | \$470,482.25   |                |                |                |
| Expended to Nov. 30, 1938                | 461,287.86     |                |                |                |
|  |                | \$9,194.39     | -              | \$9,194.39     |
| Mass. State Project D-101, P.W.A.        |                |                |                |                |
| Docket No. Mass. 1098R:                  |                |                |                |                |
| Chapter 478, Acts of 1935                | \$1,800,000.00 |                |                |                |
| Receipt (Malden Elec. Co.)               | 694.00         |                |                |                |
| Federal Grant                            | 1,176,126.69   |                |                |                |
|  | \$2,976,820.69 |                |                |                |
| Expended to Nov. 30, 1938                | 2,875,715.42   |                |                |                |
|  |                | \$101,105.27   | \$3,831.73     | \$97,273.54    |
| Plans for Sewer System:                  |                |                |                |                |
| Chapter 433, Acts of 1937                | \$270,000.00   |                |                |                |
| Expended to Nov. 30, 1938                | 167,414.74     |                |                |                |
|  |                | \$102,585.26   | \$98,734.56    | \$3,850.70     |
| Additional Sewers:                       |                |                |                |                |
| Mass. State Project D-201, P.W.A.        |                |                |                |                |
| Docket No. 1419F:                        |                |                |                |                |
| Chapter 459, Acts of 1938                | \$2,500,000.00 |                |                |                |
| Expended to Nov. 30, 1938                | 11,172.55      |                |                |                |
|  |                | \$2,488,827.45 |                |                |
| Federal Grants                           |                | 1,125,000.00   |                |                |
|  |                | \$3,613,827.45 | \$2,072,684.84 | \$1,541,142.61 |



Construction (Continued)

|   | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|---|--|-----------------------------|------------------|-------------------------|
| Sewerage Division (Continued)             |  |                             |                  |                         |
| Metropolitan Sewerage Construction Fund   |  |                             |                  |                         |
| (Continued)                               |  |                             |                  |                         |
| North System, (Continued):                |  |                             |                  |                         |
| Specials (Continued)                      |  |                             |                  |                         |
| Siphon-Chelsea Creek:                     |  |                             |                  |                         |
| Mass. State Project D-204, P.W.A.         |  |                             |                  |                         |
| Docket No. 1574F:                         |  |                             |                  |                         |
| Chapter 491, Acts of 1938 . . .           | \$250,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .           | 76.95                                      |                             |                  |                         |
|   |  | \$249,923.05                |                  |                         |
| Federal Grant . . . . .                   |  | 157,684.00                  |                  |                         |
|   |  | \$407,607.05                | \$306,167.74     | \$101,439.31            |
| Metropolitan Sewerage Construction Fund,  |  |                             |                  |                         |
| South Sewerage:                           |  |                             |                  |                         |
| Specials:                                 |  |                             |                  |                         |
| New Neponset Valley Sewer:                |  |                             |                  |                         |
| Chapter 384, Acts of 1928 . . .           | \$2,365,000.00                             |                             |                  |                         |
| Chapter 384, Acts of 1934 . . .           | 10,000.00                                  |                             |                  |                         |
|   | \$2,375,000.00                             |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .           | 2,374,323.83                               | \$676.17                    | —                | \$676.17                |
| Sewers in Quincy, Weymouth and Braintree. |  |                             |                  |                         |
| Chapter 398, Acts of 1930 . . .           | \$600,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .           | 571,977.49                                 | \$28,022.51                 | \$198.90         | \$27,823.61             |
| Boston-Newton Main Sewer.                 |  |                             |                  |                         |
| Chapter 205, Acts of 1932 . . .           | \$100,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .           | 96,604.65                                  | \$3,395.35                  | —                | \$3,395.35              |

WATER DIVISION

|   |                 |              |             |              |
|---|-----------------|--------------|-------------|--------------|
| Metropolitan Water Construction Fund:         |                 |              |             |              |
| General . . . . .                             | \$43,070,000.00 |              |             |              |
| Receipts . . . . .                            | 334,784.02      |              |             |              |
|   | \$43,404,784.02 |              |             |              |
| Expended to Nov. 30, 1938 . . .               | 43,366,827.17   | \$37,956.85  |             |              |
| Receipts, year ending Nov. 30, 1939 . . . . . |                 | 1,283.11     |             |              |
|   |                 | \$39,239.96  | \$1,176.50  | \$38,063.46  |
| Specials:                                     |                 |              |             |              |
| Property for Protection of Water Supply:      |                 |              |             |              |
| Chapter 304, Acts of 1936 . . .               | \$10,000.00     |              |             |              |
| Chapter 234, Acts of 1937 . . .               | 15,000.00       |              |             |              |
|   | \$25,000.00     |              |             |              |
| Expended to Nov. 30, 1938 . . .               | 9,403.30        | \$15,596.70  |             |              |
| Chapter 309, Acts of 1939 . . .               |                 | 5,000.00     |             |              |
|   |                 | \$20,596.70  | \$4,293.66  | \$16,303.04  |
| Improvements, Supply Mains, etc.              |                 |              |             |              |
| Chapter 245, Acts of 1931 . . .               | \$400,000.00    |              |             |              |
| Chapter 170, Acts of 1932 . . .               | 350,000.00      |              |             |              |
| Chapter 174, Acts of 1933 . . .               | 250,000.00      |              |             |              |
| Chapter 162, Acts of 1934 . . .               | 300,000.00      |              |             |              |
| Chapter 249, Acts of 1935 . . .               | 300,000.00      |              |             |              |
| Chapter 304, Acts of 1936 . . .               | 300,000.00      |              |             |              |
| Chapter 234, Acts of 1937 . . .               | 300,000.00      |              |             |              |
| Chapter 356, Acts of 1938 . . .               | 250,000.00      |              |             |              |
|   | \$2,450,000.00  |              |             |              |
| Expended to Nov. 30, 1938 . . .               | 2,251,438.82    |              |             |              |
|   | \$198,561.18    |              |             |              |
| Less amount transferred to Mass.              |                 |              |             |              |
| P.W.A. D-203, Docket No. 1516F .              | 184,800.00      | \$13,761.18  |             |              |
| Chapter 309, Acts of 1939 . . .               |                 | 250,000.00   |             |              |
|   |                 | \$263,761.18 |             |              |
| Reduced by Chapter 387, Acts of 1939 .        |                 | 8.18         |             |              |
|   |                 | \$263,753.00 | \$30,061.27 | \$233,691.73 |

## Construction (Continued)

|   | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|---|--|-----------------------------|------------------|-------------------------|
| Water Division (Continued):                       |  |                             |                  |                         |
| Metropolitan Water Construction Fund:             |  |                             |                  |                         |
| (Continued)                                       |  |                             |                  |                         |
| Specials:   |  |                             |                  |                         |
| Improvements, Supply Mains                        |  |                             |                  |                         |
| Mass. P.W.A. D-203, Docket No. 1516F:             |  |                             |                  |                         |
| Transferred from Improvements, Supply Mains, etc. |  |                             |                  |                         |
| Expended to Nov. 30, 1938                         | \$184,800.00                               |                             |                  |                         |
|   | 1,864.70                                   |                             |                  |                         |
|   |  | \$182,935.30                |                  |                         |
| Federal Grants                                    |  | 84,000.00                   |                  |                         |
|   |  | \$266,935.30                | \$248,957.88     | \$17,977.42             |
| Bathing Facilities                                |  |                             |                  |                         |
| Chapter 384, Acts of 1934                         | \$12,000.00                                |                             |                  |                         |
| Chapter 234, Acts of 1937                         | 402.61                                     |                             |                  |                         |
| Chapter 434, Acts of 1937                         | 2,500.00                                   |                             |                  |                         |
|   | \$14,902.61                                |                             |                  |                         |
| Expended to Nov. 30, 1938                         | 14,616.35                                  |                             |                  |                         |
|   |  | \$286.26                    | -                | \$286.26                |

## Miscellaneous

## PARKS DIVISION

|                                      |              |              |          |              |
|--------------------------------------|--------------|--------------|----------|--------------|
| Metropolitan Parks Trust Fund:       |              |              |          |              |
| Total receipts to Dec. 1, 1938       | \$42,385.86  |              |          |              |
| Total expenditures to Nov. 30, 1938  | 41,821.82    |              |          |              |
|                                      |              | \$564.04     |          |              |
| Receipts year ending Nov. 30, 1939   |              | -            |          |              |
|                                      |              | \$564.04     | -        | \$564.04     |
| Edwin U. Curtis Memorial Trust Fund: |              |              |          |              |
| Total receipts to Dec. 1, 1938       | \$2,104.37   |              |          |              |
| Total expenditures to Nov. 30, 1938  | 237.59       |              |          |              |
|                                      |              | \$1,866.78   |          |              |
| Receipts year ending Nov. 30, 1939   |              | 63.00        |          |              |
|                                      |              | \$1,929.78   | -        | \$1,929.78   |
| George R. Nutter Trust Fund:         |              |              |          |              |
| Total receipts to Dec. 1, 1938       | \$1,000.00   |              |          |              |
| Total expenditures to Nov. 30, 1938  | -            |              |          |              |
|                                      |              | \$1,000.00   |          |              |
| Receipts year ending Nov. 30, 1939   |              | 8.75         |          |              |
|                                      |              | \$1,008.75   | \$1.56   | \$1,007.19   |
| Blue Hills Golf Course, Income:      |              |              |          |              |
| Total receipts to Dec. 1, 1938       | \$145,137.83 |              |          |              |
| Total expenditures to Nov. 30, 1938  | 320.00       |              |          |              |
|                                      |              | \$144,817.83 |          |              |
| Receipts year ending Nov. 30, 1939   |              | 20,096.26    |          |              |
|                                      |              | \$164,914.09 | -        | \$164,914.09 |
| Emergency Public Works Commission —  |              |              |          |              |
| Construction:                        |              |              |          |              |
| Mass. State Project D-1,             |              |              |          |              |
| P.W.A. Docket No. 4478:              |              |              |          |              |
| Metropolitan District Commission:    |              |              |          |              |
| Wellington Bridge:                   |              |              |          |              |
| Authorization                        | \$930,251.44 |              |          |              |
| Expended to Nov. 30, 1938            | 925,563.14   |              |          |              |
|                                      |              | \$4,688.30   | \$439.92 | \$4,248.38   |

|   | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|---|--|-----------------------------|------------------|-------------------------|
| Maintenance   |  |                             |                  |                         |
| PARKS DIVISION  |  |                             |                  |                         |
| Metropolitan Parks Maintenance Fund:  |  |                             |                  |                         |
| General:  |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .   |  | \$1,142,355.00              |                  |                         |
| Chapter 495, Acts of 1939 . . . . .   |  | 750.00                      |                  |                         |
| Chapter 518, Acts of 1939 . . . . .   |  | 1,000.00                    |                  |                         |
| Transferred from "Small Items" . . . . .  |  | 10.00                       |                  |                         |
| Balance brought forward from 1938 appropriation to<br>cover 1938 expenditures on 1939 books . . . . . |  | 39,410.55                   |                  |                         |
|   |  | <u>\$1,183,525.55</u>       |                  |                         |
| Reduced by Chapter 387, Acts of 1939 . . . . .  |  | 599.08                      |                  |                         |
|   |  | <u>\$1,182,926.47</u>       | \$1,149,040.39   | \$33,886.08             |
| Specials:   |  |                             |                  |                         |
| Band Concerts:  |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .   |  | \$15,000.00                 | \$14,834.00      | \$166.00*               |
| Expenses for Procuring W.P.A. Funds:  |  |                             |                  |                         |
| Chapter 304, Acts of 1936 . . . . .   | \$20,000.00                                |                             |                  |                         |
| Chapter 234, Acts of 1937 . . . . .   | 12,000.00                                  |                             |                  |                         |
| Chapter 434, Acts of 1937 . . . . .   | 14,000.00                                  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . . . .   | 10,000.00                                  |                             |                  |                         |
| Chapter 497, Acts of 1938 . . . . .   | 16,000.00                                  |                             |                  |                         |
|   | <u>\$72,000.00</u>                         |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 59,572.16                                  |                             |                  |                         |
|   |  | <u>\$12,427.84</u>          |                  |                         |
| Chapter 309, Acts of 1939 . . . . .   |  | 20,000.00                   |                  |                         |
|   |  | <u>\$32,427.84</u>          | \$11,131.18      | \$21,296.66             |
| Repairs, Lynn Sea Wall:   |  |                             |                  |                         |
| Chapter 304, Acts of 1936 . . . . .   | \$10,000.00                                |                             |                  |                         |
| Chapter 234, Acts of 1937 . . . . .   | 11,000.00                                  |                             |                  |                         |
|   | <u>\$21,000.00</u>                         |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 20,805.45                                  |                             |                  |                         |
|   |  | <u>\$194.55</u>             | -                | \$194.55*               |
| Improving Wollaston Beach:  |  |                             |                  |                         |
| Chapter 234, Acts of 1937 . . . . .   | \$6,000.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 5,027.90                                   |                             |                  |                         |
|   |  | <u>\$972.10</u>             | -                | \$972.10*               |
| Sundry Investigations:  |  |                             |                  |                         |
| Chapter 434, Acts of 1937 . . . . .   | \$4,500.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 3,712.28                                   |                             |                  |                         |
|   |  | <u>\$787.72</u>             | -                | \$787.72*               |
| Storm Damages, Revere, Winthrop and<br>Quincy Shores:   |  |                             |                  |                         |
| Chapter 434, Acts of 1937 . . . . .   | \$2,000.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | -  |                             |                  |                         |
|   |  | <u>\$2,000.00</u>           | -                | \$2,000.00*             |
| Sewer Extension, Nahant Beach:  |  |                             |                  |                         |
| Chapter 434, Acts of 1937 . . . . .   | \$1,200.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 970.00                                     |                             |                  |                         |
|   |  | <u>\$230.00</u>             | -                | \$230.00*               |
| Repairs, Shelters at Revere Beach:  |  |                             |                  |                         |
| Chapter 434, Acts of 1937 . . . . .   | \$10,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 9,109.74                                   |                             |                  |                         |
|   |  | <u>\$890.26</u>             | -                | \$890.26*               |
| Renovating Magazine Beach Bath House:   |  |                             |                  |                         |
| Chapter 434, Acts of 1937 . . . . .   | \$15,000.00                                |                             |                  |                         |
| Chapter 497, Acts of 1938 . . . . .   | 3,700.00                                   |                             |                  |                         |
|   | <u>\$18,700.00</u>                         |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 15,054.00                                  |                             |                  |                         |
|   |  | <u>\$3,646.00</u>           | \$3,600.00       | \$46.00                 |
| Repairs, Sea Wall, Winthrop:  |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . . . .   | \$40,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 24,923.43                                  |                             |                  |                         |
|   |  | <u>\$15,076.57</u>          | \$15,076.57      | -                       |
| Esplanade Concerts:   |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .   |  | \$3,750.00                  | \$3,750.00       | -                       |

\* Reverted.



*Maintenance (Continued)*

|   | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|---|--|-----------------------------|------------------|-------------------------|
| Parks Division ( <i>Continued</i> )   |  |                             |                  |                         |
| Metropolitan Parks Maintenance Fund:  |  |                             |                  |                         |
| Specials ( <i>Continued</i> ):  |  |                             |                  |                         |
| Gypsy Moth Suppression:   |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . .   | \$25,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 14,425.95                                  |                             |                  |                         |
|   |  | \$10,574.05                 |                  |                         |
| Chapter 309, Acts of 1939 . . .   |  | 5,000.00                    |                  |                         |
|   |  | \$15,574.05                 | \$15,012.18      | \$561.87                |
| Dredging Mystic Lake:   |  |                             |                  |                         |
| Chapter 497, Acts of 1938 . . .   | \$100,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 26.25                                      |                             |                  |                         |
|   |  | \$99,973.75                 | \$62,856.30      | \$37,117.45             |
| Shore Protection, Winthrop:   |  |                             |                  |                         |
| Chapter 497, Acts of 1938 . . .   | \$3,000.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 2,999.90                                   |                             |                  |                         |
|   |  | \$ .10                      | -                | \$ .10                  |
| National Recreation Congress, Expenses:   |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . .   |  | \$500.00                    | \$500.00         | -                       |
| Metropolitan Parks Maintenance Fund, Boulevards:  |  |                             |                  |                         |
| General:  |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . .   |  | \$706,110.00                |                  |                         |
| Chapter 495, Acts of 1939 . . .   |  | 1,950.00                    |                  |                         |
| Balance brought forward from 1938 appropriation to<br>cover 1938 expenditures on 1939 books . . . |  | 16,503.59                   |                  |                         |
|   |  | \$724,563.59                |                  |                         |
| Reduced by Chapter 387, Acts of 1939 . . .  |  | 665.37                      |                  |                         |
|   |  | \$723,898.22                | \$666,707.28     | \$57,190.94             |
| Specials:   |  |                             |                  |                         |
| Boulevard, Fellsway to Mystic Avenue,<br>Medford:   |  |                             |                  |                         |
| Chapter 460, Acts of 1931 . . .   | \$189,473.68                               |                             |                  |                         |
| Chapter 170, Acts of 1932 . . .   | 210,526.32                                 |                             |                  |                         |
| Chapter 384, Acts of 1934 . . .   | 100,000.00                                 |                             |                  |                         |
| Chapter 497, Acts of 1935 . . .   | 20,000.00                                  |                             |                  |                         |
|   | \$520,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 518,450.75                                 |                             |                  |                         |
|   |  | \$1,549.25                  | \$150.00         | \$1,399.25              |
| Grading and Landscaping:  |  |                             |                  |                         |
| Chapter 304, Acts of 1936 . . .   | \$25,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 24,227.58                                  |                             |                  |                         |
|   |  | \$772.42                    | \$333.08         | \$439.34                |
| Expenses for Procuring W.P.A. Funds:  |  |                             |                  |                         |
| Chapter 304, Acts of 1936 . . .   | \$13,000.00                                |                             |                  |                         |
| Chapter 234, Acts of 1937 . . .   | 8,000.00                                   |                             |                  |                         |
| Chapter 434, Acts of 1937 . . .   | 16,000.00                                  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . .   | 24,000.00                                  |                             |                  |                         |
|   | \$61,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 34,763.36                                  |                             |                  |                         |
|   |  | \$26,236.64                 |                  |                         |
| Chapter 309, Acts of 1939 . . .   |  | 20,000.00                   |                  |                         |
|   |  | \$46,236.64                 | \$15,934.40      | \$30,302.24             |
| Tablets for Bridges:  |  |                             |                  |                         |
| Chapter 434, Acts of 1937 . . .   | \$1,500.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 797.65                                     |                             |                  |                         |
|   |  | \$702.35                    | -                | \$702.35*               |
| Additional Street Lighting:   |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . .   | \$20,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 18,266.73                                  |                             |                  |                         |
|   |  | \$1,733.27                  | \$1,635.83       | \$97.44                 |
| Drainage System, Medford:   |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . .   | \$4,000.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 34.40                                      |                             |                  |                         |
|   |  | \$3,965.60                  | \$3,913.87       | \$51.73                 |
| Repairs Neponset River Bridge:  |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . .   | \$125,000.00                               |                             |                  |                         |
| Expended to Nov. 30, 1938 . . .   | 15,709.90                                  |                             |                  |                         |
|   |  | \$109,290.10                | \$97,913.65      | \$11,376.45             |

\* Reverted.

*Maintenance (Continued)*

|  | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|--|--|-----------------------------|------------------|-------------------------|
| Parks Division (Continued)                               |  |                             |                  |                         |
| Metropolitan Parks Maintenance Fund,                     |  |                             |                  |                         |
| Boulevards (Continued):                                  |  |                             |                  |                         |
| Specials (Continued):                                    |  |                             |                  |                         |
| Repairs, Sea Wall, Winthrop:                             |  |                             |                  |                         |
| Chapter 495, Acts of 1939 . . . . .                      |  | \$17,000.00                 | \$12,192.11      | \$4,807.89              |
| Drains, Veterans Foreign Wars Parkway:                   |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .                      |  | \$4,000.00                  | \$10.00          | \$3,990.00              |
| Resurfacing Boulevards and Parkways:                     |  |                             |                  |                         |
| Unexpended balance of:                                   |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . . . .                      | \$126,938.65                               |                             |                  |                         |
| Less amount transferred to Mass. State                   |  |                             |                  |                         |
| Project D-209, P.W.A. Docket No.                         |  |                             |                  |                         |
| 1585F . . . . .  | 22,000.00                                  |                             |                  |                         |
|  |  | \$104,938.65                |                  |                         |
| Chapter 309, Acts of 1939 . . . . .                      |  | 250,000.00                  |                  |                         |
|  |  | \$354,938.65                |                  |                         |
| Less amount transferred to Mass. State Project D-209,    |  |                             |                  |                         |
| P.W.A. Docket No. 1585F . . . . .                        |  | 9,900.00                    |                  |                         |
|  |  | \$345,038.65                | \$165,995.51     | \$179,043.14            |
| Resurfacing Boulevards and Parkways:                     |  |                             |                  |                         |
| Traffic Circle on Revere Beach Parkway:                  |  |                             |                  |                         |
| Mass. State Project D-209, P.W.A.                        |  |                             |                  |                         |
| Docket No. 1585F:  |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . . . .                      | \$22,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .                      | 113.35                                     |                             |                  |                         |
|  |  | \$21,886.65                 |                  |                         |
| Federal Grants . . . . .                                 |  | 10,802.51                   |                  |                         |
| Chapter 309, Acts of 1939 . . . . .                      |  | 9,900.00                    |                  |                         |
|  |  | \$42,589.16                 | \$42,571.35      | \$17.81                 |
| Resurfacing Boulevards and Parkways:                     |  |                             |                  |                         |
| Certain Claims:  |  |                             |                  |                         |
| Chapter 495, Acts of 1939 . . . . .                      |  | \$1,289.30                  | \$1,289.30       | -                       |
| Charles River Basin Maintenance Fund:                    |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .                      |  | \$224,960.00                |                  |                         |
| Balance brought forward from 1938 appropriation to cover |  |                             |                  |                         |
| 1938 expenditures on 1939 books . . . . .                |  | 7,341.69                    |                  |                         |
|  |  | \$232,301.69                |                  |                         |
| Reduced by Chapter 387, Acts of 1939 . . . . .           |  | 15.49                       |                  |                         |
|  |  | \$232,286.20                | \$220,997.75     | \$11,288.45             |
| Charles River Basin Maintenance Fund:                    |  |                             |                  |                         |
| Special:   |  |                             |                  |                         |
| Dredging Broad and Lechmere Canals:                      |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .                      |  | \$10,000.00                 | \$40.00          | \$9,960.00              |
| Metropolitan Parks Maintenance Fund, Nantasket:          |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .                      |  | \$92,510.00                 |                  |                         |
| Balance brought forward from 1938 appropriation to cover |  |                             |                  |                         |
| 1938 expenditures on 1939 books . . . . .                |  | 1,887.17                    |                  |                         |
|  |  | \$94,397.17                 |                  |                         |
| Reduced by Chapter 387, Acts of 1939 . . . . .           |  | 207.52                      |                  |                         |
|  |  | \$94,189.65                 | \$91,934.72      | \$2,254.93              |
| Metropolitan Parks Maintenance Fund, Wellington Bridge:  |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .                      |  | \$11,800.00                 |                  |                         |
| Balance brought forward from 1938 appropriation to cover |  |                             |                  |                         |
| 1938 expenditures on 1939 books . . . . .                |  | 573.05                      |                  |                         |
|  |  | \$12,373.05                 | \$11,870.01      | \$503.04                |
| Maintenance of Bunker Hill Monument:                     |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .                      |  | \$13,200.00                 |                  |                         |
| Balance brought forward from 1938 appropriation to cover |  |                             |                  |                         |
| 1938 expenditures on 1939 books . . . . .                |  | 789.50                      |                  |                         |
|  |  | \$13,989.50                 | \$13,434.79      | \$554.71                |

## Maintenance (Continued)

|   | CONDITION OF<br>FUND AS OF<br>DEC. 1, 1938 | AMOUNT<br>AVAILABLE<br>1939 | EXPENDED<br>1939 | BALANCE<br>DEC. 1, 1939 |
|---|--|-----------------------------|------------------|-------------------------|
| <b>SEWERAGE DIVISION</b>  |  |                             |                  |                         |
| Metropolitan Sewerage Maintenance Fund, North System:   |  |                             |                  |                         |
| General:  |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .   |  | \$417,390.00                |                  |                         |
| Chapter 495, Acts of 1939 . . . . .   |  | 375.00                      |                  |                         |
| Balance brought forward from 1938 appropriation to<br>cover 1938 expenditures on 1939 books . . . . . |  | 5,339.40                    |                  |                         |
|   |  | <u>\$423,104.40</u>         |                  |                         |
| Reduced by Chapter 387, Acts of 1939 . . . . .  |  | 585.19                      |                  |                         |
|   |  | <u>\$422,519.21</u>         | \$401,213.18     | \$21,306.03             |
| Specials:   |  |                             |                  |                         |
| Deer Island Wharf:  |  |                             |                  |                         |
| Chapter 234, Acts of 1937 . . . . .   | \$2,000.00                                 |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 38.90                                      |                             |                  |                         |
|   |  | <u>\$1,961.10</u>           | -                | \$1,961.10*             |
| Trestle, Deer Island:   |  |                             |                  |                         |
| Chapter 234, Acts of 1937 . . . . .   | \$20,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 15,692.38                                  |                             |                  |                         |
|   |  | <u>\$4,307.62</u>           | -                | \$4,307.62*             |
| Boilers, East Boston Pumping Station:   |  |                             |                  |                         |
| Chapter 356, Acts of 1938 . . . . .   | \$40,000.00                                |                             |                  |                         |
| Expended to Nov. 30, 1938 . . . . .   | 1,926.00                                   |                             |                  |                         |
|   |  | <u>\$38,074.00</u>          | \$10,989.76      | \$27,084.24             |
| Metropolitan Sewerage Maintenance Fund, South System:   |  |                             |                  |                         |
| General:  |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .   |  | \$314,940.00                |                  |                         |
| Chapter 495, Acts of 1939 . . . . .   |  | 375.00                      |                  |                         |
| Balance brought forward from 1938 appropriation to cover<br>1938 expenditures on 1939 books . . . . . |  | 16,219.24                   |                  |                         |
|   |  | <u>\$331,534.24</u>         |                  |                         |
| Reduced by Chapter 387, Acts of 1939 . . . . .  |  | 593.99                      |                  |                         |
|   |  | <u>\$330,940.25</u>         | \$308,910.22     | \$22,030.03             |
| Metropolitan Sewerage Maintenance Fund, South System:   |  |                             |                  |                         |
| Specials:   |  |                             |                  |                         |
| Certain Pump:   |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .   |  | \$23,000.00                 | -                | \$23,000.00             |
| Hough's Neck Pumping Station Improvements:  |  |                             |                  |                         |
| Chapter 309, Acts of 1939 . . . . .   |  | \$45,000.00                 | -                | \$45,000.00             |

## WATER DIVISION

|   |             |                       |              |             |
|---|-------------|-----------------------|--------------|-------------|
| Metropolitan Water Maintenance Fund:  |             |                       |              |             |
| General:  |             |                       |              |             |
| Chapter 309, Acts of 1939 . . . . .   |             | \$1,008,250.00        |              |             |
| Chapter 495, Acts of 1939 . . . . .   |             | 750.00                |              |             |
| Balance brought forward from 1938 appropriation to<br>cover 1938 expenditures on 1939 books . . . . . |             | 19,590.87             |              |             |
|   |             | <u>\$1,028,590.87</u> |              |             |
| Reduced by Chapter 387, Acts of 1939 . . . . .  |             | 816.37                |              |             |
|   |             | <u>\$1,027,774.50</u> | \$975,057.04 | \$52,717.46 |
| Special:  |             |                       |              |             |
| Repairs to Water Main:  |             |                       |              |             |
| Chapter 434, Acts of 1937 . . . . .   | \$10,000.00 |                       |              |             |
| Reappropriated by Chapter 309, Acts of<br>1939:   |             |                       |              |             |
| Expended to Nov. 30, 1938 . . . . .   | 5,920.45    |                       |              |             |
|   |             | <u>\$4,079.55</u>     | \$2,468.44   | \$1,611.11  |

\* Reverted.



## Receipts — Year Ended November 30, 1939

## PARKS DIVISION

Not available for expenditure:

Credited to:

|   |              |              |
|---|--------------|--------------|
| Metropolitan Parks Fund, Special . . . . .                | \$111,559.27 |              |
| Metropolitan Parks Maintenance Fund, General . . . . .    | 33,459.06    |              |
| Metropolitan Parks Maintenance Fund, Boulevards . . . . . | 759.59       |              |
| General Revenue . . . . .                                 | 3,631.32     |              |
| Hurricane and Flood Damage . . . . .                      | 2,963.45     |              |
|   | <hr/>        | \$152,372.69 |

Available for expenditure (added to funds):

Credited to:

|                                       |         |                    |
|---------------------------------------|---------|--------------------|
| Edwin U. Curtis Memorial . . . . .    | \$63.00 |                    |
| George R. Nutter Trust Fund . . . . . | 8.75    |                    |
|                                       | <hr/>   | 71.75              |
|                                       |         | <hr/> \$152,444.44 |

## SEWERAGE DIVISION

Not available for expenditure:

Credited to:

|   |            |             |
|---|------------|-------------|
| Metropolitan Sewerage Sinking Fund, North System . . . . .      | \$1,221.00 |             |
| Metropolitan Sewerage Sinking Fund, South System . . . . .      | 144.00     |             |
| Metropolitan Sewerage Construction Fund, North System . . . . . | 3.60       |             |
| Metropolitan Sewerage Maintenance Fund, North System . . . . .  | 6,968.27*  |             |
| Metropolitan Sewerage Maintenance Fund, South System . . . . .  | 6,887.37** |             |
| Metropolitan Sewerage Interest Fund, North System . . . . .     | 743.00     |             |
|   | <hr/>      | \$15,967.24 |

## WATER DIVISION

Not available for expenditure:

Credited to:

|   |              |              |
|---|--------------|--------------|
| Metropolitan Water Sinking Fund . . . . .     | \$131,801.56 |              |
| Metropolitan Water Maintenance Fund . . . . . | 16,790.21*** |              |
| Hurricane and Flood Damage . . . . .          | 625.95       |              |
|   | <hr/>        | \$149,217.72 |

Available for expenditure (added to fund):

Credited to:

|  |          |                    |
|--|----------|--------------------|
| Metropolitan Water Construction Fund . . . . . | 1,283.11 |                    |
|  | <hr/>    | \$150,500.83       |
|  |          | <hr/> \$318,912.51 |

\* Includes Prior Years Account \$110.00

\*\* Includes Prior Years Account \$84.87.

\*\*\* Includes Prior Years Account, \$12.18.

## APPENDIX No. 2

Information relating to Parks Division appears in the following tables:

TABLE 1

*The following is a record of the traffic through locks and drawbridges during the year.*

## CHARLES RIVER DAM LOCK AND DRAWBRIDGE

|  |            |
|--|------------|
| Number of openings of highway drawbridge . . . . . | 2,141      |
| Number of openings of lock . . . . .               | 4,411      |
| Number of vessels . . . . .                        | 2,638      |
| Number of small boats . . . . .                    | 7,372      |
| Coal (tons) . . . . .                              | 59½        |
| Sand (tons) . . . . .                              | 174,390    |
| Gravel (tons) . . . . .                            | 76,155     |
| Oil (bbls.) . . . . .                              | 434,968    |
| Oil (gals.) . . . . .                              | 31,503,010 |
| Granite (tons) . . . . .                           | 544        |
| Mud (tons) . . . . .                               | 250        |
| Lumber (ft. B.M.) . . . . .                        | 1,493,000  |
| Tar (bbls.) . . . . .                              | 6,000      |
| Laths (bundles) . . . . .                          | 58,800     |
| Piling (lin. ft.) . . . . .                        | 800        |
| Piles . . . . .                                    | 283        |
| Machinery (tons) . . . . .                         | 10         |
| Tank . . . . .                                     | 1          |
| Spars . . . . .                                    | 3          |
| Masts . . . . .                                    | 2          |

*Cradock Bridge Lock*

|  |     |
|--|-----|
| Number of openings . . . . .           | 109 |
| Number of boats through lock . . . . . | 125 |
| Number of boats over rolls . . . . .   | 53  |

*Dorchester Bay Drawbridge*

|                              |       |
|------------------------------|-------|
| Number of openings . . . . . | 984   |
| Number of vessels . . . . .  | 1,176 |

*General Edwards Drawbridge*

|                              |     |
|------------------------------|-----|
| Number of openings . . . . . | 223 |
| Number of vessels . . . . .  | 379 |

*Malden River Drawbridge*

|                              |     |
|------------------------------|-----|
| Number of openings . . . . . | 201 |
| Number of vessels . . . . .  | 381 |

*Mystic River Drawbridge*

|                              |    |
|------------------------------|----|
| Number of openings . . . . . | 48 |
| Number of vessels . . . . .  | 56 |

*Neponset River Drawbridge*

|                              |     |
|------------------------------|-----|
| Number of openings . . . . . | 293 |
| Number of vessels . . . . .  | 409 |

TABLE 2.—Metropolitan Park System—Areas of Reservations and Parkways—December 31, 1939.

|    |            | (RESERVATIONS ACRES) |            |            |             |               |               |                             |                 |              |                 |                |              |              |             |                | (PARKWAYS ACRES) |               |            |                          |        |            |               |              |            |         |                 |               |              |                |            | Grand Total Reservations and Parkways (Acres) |              |              |          |        |             |           |          |        |    |
|----|------------|----------------------|------------|------------|-------------|---------------|---------------|-----------------------------|-----------------|--------------|-----------------|----------------|--------------|--------------|-------------|----------------|------------------|---------------|------------|--------------------------|--------|------------|---------------|--------------|------------|---------|-----------------|---------------|--------------|----------------|------------|---|--------------|--------------|----------|--------|-------------|-----------|----------|--------|----|
|    |            | Beaver Brook         | Blue Hills | Breakheart | Bunker Hill | Charles River | Hemlock Gorge | King's Beach and Lynn Shore | Middlesex Fells | Mystic River | Nantasket Beach | Neponset River | Quincy Shore | Revere Beach | Stony Brook | Winthrop Shore | Total Acres      | Alewife Brook | Blue Hills | Veterans of Foreign Wars | Dedham | Fresh Pond | Furnace Brook | Hammond Pond | Lynn Fells | Lynnway | Middlesex Fells | Mystic Valley | Nahant Beach | Neponset River | Old Colony | Quannapowitt                                  | Revere Beach | West Roxbury | Winthrop | Woburn | Total Acres |           |          |        |    |
| 1  | Cities.    | -                    | -          | -          | 5.05        | 204.53        | -             | -                           | -               | -            | -               | 145.57         | -            | -            | 463.65      | -              | 819.80           | -             | .20        | 49.54                    | 21.98  | -          | -             | -            | -          | -       | -               | -             | 28.80*       | 59.12          | -          | -   | -            | 76.70        | -        | -      | 236.34      | 1,056.14  | 1        |        |    |
| 2  | Cambridge  | -                    | -          | -          | -           | 225.47        | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 225.47           | 86.21         | -          | -                        | -      | 12.40      | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | 21.40        | -            | -        | 98.61  | 324.08      | 2         |          |        |    |
| 3  | Chelsea    | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | -                | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | 31.37   | -            | -            | 21.40    | 21.40  | 3           |           |          |        |    |
| 4  | Everett    | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | -                | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | 31.37   | -            | -            | 31.37    | 31.37  | 4           |           |          |        |    |
| 5  | Lynn       | -                    | -          | -          | -           | -             | 19.59         | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 19.59            | -             | -          | -                        | -      | -          | -             | -            | .93        | -       | -               | -             | .32          | -              | -          | -   | -            | -            | -        | 1.25   | 20.84       | 5         |          |        |    |
| 6  | Malden     | -                    | -          | -          | -           | -             | -             | -                           | 59.53           | -            | -               | -              | -            | -            | -           | -              | 59.53            | -             | -          | -                        | -      | -          | -             | -            | -          | 23.58   | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | 23.58       | 83.11     | 6        |        |    |
| 7  | Medford    | -                    | -          | -          | -           | -             | -             | -                           | 969.87          | 42.32        | -               | -              | -            | -            | -           | -              | 1,012.19         | -             | -          | -                        | -      | -          | -             | -            | -          | 45.01   | 276.80          | -             | -            | -              | -          | -   | 8.10         | -            | -        | -      | -           | 329.91    | 1,342.10 | 7      |    |
| 8  | Melrose    | -                    | -          | -          | -           | -             | -             | -                           | 180.19          | -            | -               | -              | -            | -            | -           | -              | 180.19           | -             | -          | -                        | -      | -          | -             | -            | 14.28      | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | 14.28  | 194.47      | 8         |          |        |    |
| 9  | Newton     | -                    | -          | -          | -           | 187.63        | 4.24          | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 191.87           | -             | -          | -                        | -      | -          | 101.46        | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | 117.46   | 309.33 | 9           |           |          |        |    |
| 10 | Quincy     | -                    | 2,562.56   | -          | -           | -             | -             | -                           | -               | -            | -               | -              | 40.75        | -            | -           | -              | 2,603.31         | -             | -          | -                        | -      | -          | 101.12        | -            | -          | -       | -               | -             | -            | 2.67           | -          | -   | -            | -            | -        | 103.79 | 2,707.10    | 10        |          |        |    |
| 11 | Revere     | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | 54.31        | -           | -              | 64.31            | -             | -          | -                        | -      | -          | -             | -            | 7.72       | -       | -               | -             | -            | -              | -          | 67.22   | -            | 8.61         | -        | -      | 83.55       | 147.86    | 11       |        |    |
| 12 | Somerville | -                    | -          | -          | -           | -             | -             | -                           | -               | 5.91         | -               | -              | -            | -            | -           | -              | 5.91             | 5.36          | -          | -                        | -      | -          | -             | -            | -          | -       | 11.83           | 4.95          | -            | -              | -          | -   | -            | -            | -        | -      | 22.14       | 28.05     | 12       |        |    |
| 13 | Waltham    | 42.77                | -          | -          | -           | 38.71         | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 81.48            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | 81.48       | 13        |          |        |    |
| 14 | Woburn     | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | -                | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | 22.63        | 22.63    | 22.63  | 14          |           |          |        |    |
| 15 | Towns.     | -                    | -          | -          | -           | -             | -             | -                           | -               | 7.83         | -               | -              | -            | -            | -           | -              | 7.83             | 26.07         | -          | -                        | -      | -          | -             | -            | -          | -       | 17.02           | -             | -            | -              | -          | -   | -            | -            | -        | -      | 43.09       | 50.92     | 15       |        |    |
| 16 | Arlington  | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 15.55            | 20.43         | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | 20.43  | 35.98       | 16        |          |        |    |
| 17 | Belmont    | 15.55                | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 15.55            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | 69.75       | 69.75     | 17       |        |    |
| 18 | Braintree  | -                    | 69.75      | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 69.75            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | 69.75       | 69.75     | 18       |        |    |
| 19 | Brookline  | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | -                | -             | -          | 2.96                     | -      | -          | -             | 75.04        | -          | -       | -               | -             | -            | -              | -          | -   | -            | 13.65        | -        | -      | 91.56       | 91.66     | 19       |        |    |
| 20 | Canton     | -                    | 700.61     | -          | -           | -             | -             | -                           | -               | -            | -               | 264.26         | -            | -            | -           | -              | 964.87           | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | 964.87      | 964.87    | 20       |        |    |
| 21 | Dedham     | -                    | -          | -          | -           | 6.51          | -             | -                           | -               | -            | -               | 234.54         | -            | -            | -           | -              | 241.05           | -             | -          | -                        | 15.15  | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | 15.16       | 256.21    | 21       |        |    |
| 22 | Dover      | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | -                | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | -         | 22       |        |    |
| 23 | Hingham    | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | -                | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | -         | 23       |        |    |
| 24 | Hull       | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | 25.59           | -              | -            | -            | -           | -              | 25.59            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | 25.59     | 25.59    | 24     |    |
| 25 | Milton     | -                    | 1,555.78   | -          | -           | -             | -             | -                           | -               | -            | -               | 259.09         | -            | -            | -           | -              | 1,824.87         | -             | 83.31      | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | 134.75      | 1,959.62  | 25       |        |    |
| 26 | Nahant     | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | -                | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | 66.22         | 51.44        | -              | -          | -   | -            | -            | -        | 65.22  | 65.22       | 26        |          |        |    |
| 27 | Needham    | -                    | -          | -          | -           | -             | 14.24         | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 14.24            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | 14.24     | 14.24    | 27     |    |
| 28 | (Randolph) | -                    | 896.00     | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 890.00           | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | 896.00    | 896.00   | 28     |    |
| 29 | Saugus     | -                    | -          | 532.05     | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 532.05           | -             | -          | -                        | -      | -          | -             | -            | 25.35      | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | 25.35     | 557.40   | 29     |    |
| 30 | Stoneham   | -                    | -          | -          | -           | -             | -             | -                           | 705.41          | -            | -               | -              | -            | -            | -           | -              | 705.41           | -             | -          | -                        | -      | -          | -             | -            | .15        | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | .15         | 705.56    | 705.56   | 30     |    |
| 31 | Swampscott | -                    | -          | -          | -           | -             | -             | 3.10                        | -               | -            | -               | -              | -            | -            | -           | -              | 3.10             | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | 3.10      | 3.10     | 31     |    |
| 32 | Wakefield  | -                    | -          | 87.48      | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 87.48            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | 87.48     | 87.48    | 32     |    |
| 33 | Watertown  | -                    | -          | -          | -           | 80.95         | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 80.95            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | 80.95     | 80.95    | 33     |    |
| 34 | Wellesley  | -                    | -          | -          | -           | 66.07         | 4.58          | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 70.65            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | -         | 70.65    | 70.65  | 34 |
| 35 | Weston     | -                    | -          | -          | -           | 153.47        | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | 153.47           | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | -         | 153.47   | 153.47 | 35 |
| 36 | Westwood   | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | 5.57           | -            | -            | -           | -              | 6.57             | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | -         | 6.57     | 6.57   | 36 |
| 37 | Weymouth   | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | -              | -                | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | -            | -        | -      | -           | -         | -        | 37     |    |
| 38 | Winchester | -                    | -          | -          | -           | -             | -             | 261.93                      | -               | -            | -               | -              | -            | -            | -           | -              | 261.93           | -             | -          | -                        | -      | -          | -             | -            | -          | -       | 42.28           | -             | -            | -              | -          | -   | -            | -            | -        | .60    | 42.88       | 304.81    | 304.81   | 38     |    |
| 39 | Winthrop   | -                    | -          | -          | -           | -             | -             | -                           | -               | -            | -               | -              | -            | -            | -           | 15.83          | 16.83            | -             | -          | -                        | -      | -          | -             | -            | -          | -       | -               | -             | -            | -              | -          | -   | -            | .13          | -        | -      | .13         | 16.96     | 16.96    | 39     |    |
|    |            | 58.32                | 5,784.70   | 619.53     | 6.05        | 963.34        | 23.06         | 22.69                       | 2,176.93        | 56.06        | 25.59           | 920.03         | 40.75        | 64.31        | 463.65      | 16.83          | 11,241.84        | 138.07        | 83.51      | 52.50                    | 37.14  | 12.40      | 101.12        | 192.50       | 39.78      | 8.65    | 80.42           | 341.05        | 66.54        | 80.24          | 61.79      | 15.54   | 128.09       | 90.36        | 8.74     | 23.23  | 1,561.67    | 12,803.51 |          |        |    |

\*Includes East Milton St. from Wolcott Square to Paul's Bridge.







| Date | Description | Amount |       | Balance |
|------|-------------|--------|-------|---------|
|      |             | To     | By    |         |
| 1890 | Jan 1       |        |       | 100.00  |
| 1890 | Jan 10      | 5.00   |       | 95.00   |
| 1890 | Jan 20      |        | 10.00 | 85.00   |
| 1890 | Jan 30      | 15.00  |       | 70.00   |
| 1890 | Feb 10      |        | 20.00 | 50.00   |
| 1890 | Feb 20      | 10.00  |       | 40.00   |
| 1890 | Feb 28      |        | 5.00  | 35.00   |
| 1890 | Mar 10      | 20.00  |       | 15.00   |
| 1890 | Mar 20      |        | 10.00 | 5.00    |
| 1890 | Mar 31      |        |       | 5.00    |
| 1891 | Apr 1       |        |       | 5.00    |
| 1891 | Apr 10      | 10.00  |       | 15.00   |
| 1891 | Apr 20      |        | 5.00  | 10.00   |
| 1891 | Apr 30      | 5.00   |       | 15.00   |
| 1891 | May 10      |        | 10.00 | 5.00    |
| 1891 | May 20      | 15.00  |       | 20.00   |
| 1891 | May 31      |        |       | 20.00   |
| 1891 | Jun 1       |        |       | 20.00   |
| 1891 | Jun 10      | 10.00  |       | 10.00   |
| 1891 | Jun 20      |        | 5.00  | 5.00    |
| 1891 | Jun 30      | 5.00   |       | 10.00   |
| 1891 | Jul 1       |        |       | 10.00   |
| 1891 | Jul 10      | 15.00  |       | 25.00   |
| 1891 | Jul 20      |        | 10.00 | 15.00   |
| 1891 | Jul 31      | 10.00  |       | 25.00   |
| 1891 | Aug 1       |        |       | 25.00   |
| 1891 | Aug 10      | 20.00  |       | 5.00    |
| 1891 | Aug 20      |        | 10.00 | 15.00   |
| 1891 | Aug 31      | 10.00  |       | 25.00   |
| 1891 | Sep 1       |        |       | 25.00   |
| 1891 | Sep 10      | 15.00  |       | 10.00   |
| 1891 | Sep 20      |        | 5.00  | 5.00    |
| 1891 | Sep 30      | 5.00   |       | 10.00   |
| 1891 | Oct 1       |        |       | 10.00   |
| 1891 | Oct 10      | 10.00  |       | 20.00   |
| 1891 | Oct 20      |        | 10.00 | 10.00   |
| 1891 | Oct 31      | 10.00  |       | 20.00   |
| 1891 | Nov 1       |        |       | 20.00   |
| 1891 | Nov 10      | 15.00  |       | 5.00    |
| 1891 | Nov 20      |        | 10.00 | 15.00   |
| 1891 | Nov 30      | 10.00  |       | 25.00   |
| 1891 | Dec 1       |        |       | 25.00   |
| 1891 | Dec 10      | 20.00  |       | 5.00    |
| 1891 | Dec 20      |        | 10.00 | 15.00   |
| 1891 | Dec 31      | 10.00  |       | 25.00   |
| 1892 | Jan 1       |        |       | 25.00   |
| 1892 | Jan 10      | 15.00  |       | 10.00   |
| 1892 | Jan 20      |        | 5.00  | 5.00    |
| 1892 | Jan 31      | 5.00   |       | 10.00   |
| 1892 | Feb 1       |        |       | 10.00   |
| 1892 | Feb 10      | 10.00  |       | 20.00   |
| 1892 | Feb 20      |        | 10.00 | 10.00   |
| 1892 | Feb 28      | 10.00  |       | 20.00   |
| 1892 | Mar 1       |        |       | 20.00   |
| 1892 | Mar 10      | 15.00  |       | 5.00    |
| 1892 | Mar 20      |        | 10.00 | 15.00   |
| 1892 | Mar 31      | 10.00  |       | 25.00   |
| 1892 | Apr 1       |        |       | 25.00   |
| 1892 | Apr 10      | 20.00  |       | 5.00    |
| 1892 | Apr 20      |        | 10.00 | 15.00   |
| 1892 | Apr 30      | 10.00  |       | 25.00   |
| 1892 | May 1       |        |       | 25.00   |
| 1892 | May 10      | 15.00  |       | 10.00   |
| 1892 | May 20      |        | 10.00 | 0.00    |
| 1892 | May 31      | 10.00  |       | 10.00   |
| 1892 | Jun 1       |        |       | 10.00   |
| 1892 | Jun 10      | 10.00  |       | 20.00   |
| 1892 | Jun 20      |        | 10.00 | 10.00   |
| 1892 | Jun 30      | 10.00  |       | 20.00   |
| 1892 | Jul 1       |        |       | 20.00   |
| 1892 | Jul 10      | 15.00  |       | 5.00    |
| 1892 | Jul 20      |        | 10.00 | 15.00   |
| 1892 | Jul 31      | 10.00  |       | 25.00   |
| 1892 | Aug 1       |        |       | 25.00   |
| 1892 | Aug 10      | 20.00  |       | 5.00    |
| 1892 | Aug 20      |        | 10.00 | 15.00   |
| 1892 | Aug 31      | 10.00  |       | 25.00   |
| 1892 | Sep 1       |        |       | 25.00   |
| 1892 | Sep 10      | 15.00  |       | 10.00   |
| 1892 | Sep 20      |        | 10.00 | 0.00    |
| 1892 | Sep 30      | 10.00  |       | 10.00   |
| 1892 | Oct 1       |        |       | 10.00   |
| 1892 | Oct 10      | 10.00  |       | 20.00   |
| 1892 | Oct 20      |        | 10.00 | 10.00   |
| 1892 | Oct 31      | 10.00  |       | 20.00   |
| 1892 | Nov 1       |        |       | 20.00   |
| 1892 | Nov 10      | 15.00  |       | 5.00    |
| 1892 | Nov 20      |        | 10.00 | 15.00   |
| 1892 | Nov 30      | 10.00  |       | 25.00   |
| 1892 | Dec 1       |        |       | 25.00   |
| 1892 | Dec 10      | 20.00  |       | 5.00    |
| 1892 | Dec 20      |        | 10.00 | 15.00   |
| 1892 | Dec 31      | 10.00  |       | 25.00   |
| 1893 | Jan 1       |        |       | 25.00   |
| 1893 | Jan 10      | 15.00  |       | 10.00   |
| 1893 | Jan 20      |        | 5.00  | 5.00    |
| 1893 | Jan 31      | 5.00   |       | 10.00   |
| 1893 | Feb 1       |        |       | 10.00   |
| 1893 | Feb 10      | 10.00  |       | 20.00   |
| 1893 | Feb 20      |        | 10.00 | 10.00   |
| 1893 | Feb 28      | 10.00  |       | 20.00   |
| 1893 | Mar 1       |        |       | 20.00   |
| 1893 | Mar 10      | 15.00  |       | 5.00    |
| 1893 | Mar 20      |        | 10.00 | 15.00   |
| 1893 | Mar 31      | 10.00  |       | 25.00   |
| 1893 | Apr 1       |        |       | 25.00   |
| 1893 | Apr 10      | 20.00  |       | 5.00    |
| 1893 | Apr 20      |        | 10.00 | 15.00   |
| 1893 | Apr 30      | 10.00  |       | 25.00   |
| 1893 | May 1       |        |       | 25.00   |
| 1893 | May 10      | 15.00  |       | 10.00   |
| 1893 | May 20      |        | 10.00 | 0.00    |
| 1893 | May 31      | 10.00  |       | 10.00   |
| 1893 | Jun 1       |        |       | 10.00   |
| 1893 | Jun 10      | 10.00  |       | 20.00   |
| 1893 | Jun 20      |        | 10.00 | 10.00   |
| 1893 | Jun 30      | 10.00  |       | 20.00   |
| 1893 | Jul 1       |        |       | 20.00   |
| 1893 | Jul 10      | 15.00  |       | 5.00    |
| 1893 | Jul 20      |        | 10.00 | 15.00   |
| 1893 | Jul 31      | 10.00  |       | 25.00   |
| 1893 | Aug 1       |        |       | 25.00   |
| 1893 | Aug 10      | 20.00  |       | 5.00    |
| 1893 | Aug 20      |        | 10.00 | 15.00   |
| 1893 | Aug 31      | 10.00  |       | 25.00   |
| 1893 | Sep 1       |        |       | 25.00   |
| 1893 | Sep 10      | 15.00  |       | 10.00   |
| 1893 | Sep 20      |        | 10.00 | 0.00    |
| 1893 | Sep 30      | 10.00  |       | 10.00   |
| 1893 | Oct 1       |        |       | 10.00   |
| 1893 | Oct 10      | 10.00  |       | 20.00   |
| 1893 | Oct 20      |        | 10.00 | 10.00   |
| 1893 | Oct 31      | 10.00  |       | 20.00   |
| 1893 | Nov 1       |        |       | 20.00   |
| 1893 | Nov 10      | 15.00  |       | 5.00    |
| 1893 | Nov 20      |        | 10.00 | 15.00   |
| 1893 | Nov 30      | 10.00  |       | 25.00   |
| 1893 | Dec 1       |        |       | 25.00   |
| 1893 | Dec 10      | 20.00  |       | 5.00    |
| 1893 | Dec 20      |        | 10.00 | 15.00   |
| 1893 | Dec 31      | 10.00  |       | 25.00   |
| 1894 | Jan 1       |        |       | 25.00   |
| 1894 | Jan 10      | 15.00  |       | 10.00   |
| 1894 | Jan 20      |        | 5.00  | 5.00    |
| 1894 | Jan 31      | 5.00   |       | 10.00   |
| 1894 | Feb 1       |        |       | 10.00   |
| 1894 | Feb 10      | 10.00  |       | 20.00   |
| 1894 | Feb 20      |        | 10.00 | 10.00   |
| 1894 | Feb 28      | 10.00  |       | 20.00   |
| 1894 | Mar 1       |        |       | 20.00   |
| 1894 | Mar 10      | 15.00  |       | 5.00    |
| 1894 | Mar 20      |        | 10.00 | 15.00   |
| 1894 | Mar 31      | 10.00  |       | 25.00   |
| 1894 | Apr 1       |        |       | 25.00   |
| 1894 | Apr 10      | 20.00  |       | 5.00    |
| 1894 | Apr 20      |        | 10.00 | 15.00   |
| 1894 | Apr 30      | 10.00  |       | 25.00   |
| 1894 | May 1       |        |       | 25.00   |
| 1894 | May 10      | 15.00  |       | 10.00   |
| 1894 | May 20      |        | 10.00 | 0.00    |
| 1894 | May 31      | 10.00  |       | 10.00   |
| 1894 | Jun 1       |        |       | 10.00   |
| 1894 | Jun 10      | 10.00  |       | 20.00   |
| 1894 | Jun 20      |        | 10.00 | 10.00   |
| 1894 | Jun 30      | 10.00  |       | 20.00   |
| 1894 | Jul 1       |        |       | 20.00   |
| 1894 | Jul 10      | 15.00  |       | 5.00    |
| 1894 | Jul 20      |        | 10.00 | 15.00   |
| 1894 | Jul 31      | 10.00  |       | 25.00   |
| 1894 | Aug 1       |        |       | 25.00   |
| 1894 | Aug 10      | 20.00  |       | 5.00    |
| 1894 | Aug 20      |        | 10.00 | 15.00   |
| 1894 | Aug 31      | 10.00  |       | 25.00   |
| 1894 | Sep 1       |        |       | 25.00   |
| 1894 | Sep 10      | 15.00  |       | 10.00   |
| 1894 | Sep 20      |        | 10.00 | 0.00    |
| 1894 | Sep 30      | 10.00  |       | 10.00   |
| 1894 | Oct 1       |        |       | 10.00   |
| 1894 | Oct 10      | 10.00  |       | 20.00   |
| 1894 | Oct 20      |        | 10.00 | 10.00   |
| 1894 | Oct 31      | 10.00  |       | 20.00   |
| 1894 | Nov 1       |        |       | 20.00   |
| 1894 | Nov 10      | 15.00  |       | 5.00    |
| 1894 | Nov 20      |        | 10.00 | 15.00   |
| 1894 | Nov 30      | 10.00  |       | 25.00   |
| 1894 | Dec 1       |        |       | 25.00   |
| 1894 | Dec 10      | 20.00  |       | 5.00    |
| 1894 | Dec 20      |        | 10.00 | 15.00   |
| 1894 | Dec 31      | 10.00  |       | 25.00   |
| 1895 | Jan 1       |        |       | 25.00   |
| 1895 | Jan 10      | 15.00  |       | 10.00   |
| 1895 | Jan 20      |        | 5.00  | 5.00    |
| 1895 | Jan 31      | 5.00   |       | 10.00   |
| 1895 | Feb 1       |        |       | 10.00   |
| 1895 | Feb 10      | 10.00  |       | 20.00   |
| 1895 | Feb 20      |        | 10.00 | 10.00   |
| 1895 | Feb 28      | 10.00  |       | 20.00   |
| 1895 | Mar 1       |        |       | 20.00   |
| 1895 | Mar 10      | 15.00  |       | 5.00    |
| 1895 | Mar 20      |        | 10.00 | 15.00   |
| 1895 | Mar 31      | 10.00  |       | 25.00   |
| 1895 | Apr 1       |        |       | 25.00   |
| 1895 | Apr 10      | 20.00  |       | 5.00    |
| 1895 | Apr 20      |        | 10.00 | 15.00   |
| 1895 | Apr 30      | 10.00  |       | 25.00   |
| 1895 | May 1       |        |       | 25.00   |
| 1895 | May 10      | 15.00  |       | 10.00   |
| 1895 | May 20      |        | 10.00 | 0.00    |
| 1895 | May 31      | 10.00  |       | 10.00   |
| 1895 | Jun 1       |        |       | 10.00   |
| 1895 | Jun 10      | 10.00  |       | 20.00   |
| 1895 | Jun 20      |        | 10.00 | 10.00   |
| 1895 | Jun 30      | 10.00  |       | 20.00   |
| 1895 | Jul 1       |        |       | 20.00   |
| 1895 | Jul 10      | 15.00  |       | 5.00    |
| 1895 | Jul 20      |        | 10.00 | 15.00   |
| 1895 | Jul 31      | 10.00  |       | 25.00   |
| 1895 | Aug 1       |        |       | 25.00   |
| 1895 | Aug 10      | 20.00  |       | 5.00    |
| 1895 | Aug 20      |        | 10.00 | 15.00   |
| 1895 | Aug 31      | 10.00  |       | 25.00   |
| 1895 | Sep 1       |        |       | 25.00   |
| 1895 | Sep 10      | 15.00  |       | 10.00   |
| 1895 | Sep 20      |        | 10.00 | 0.00    |
| 1895 | Sep 30      | 10.00  |       | 10.00   |
| 1895 | Oct 1       |        |       | 10.00   |
| 1895 | Oct 10      | 10.00  |       | 20.00   |
| 1895 | Oct 20      |        | 10.00 | 10.00   |
| 1895 | Oct 31      | 10.00  |       | 20.00   |
| 1895 | Nov 1       |        |       | 20.00   |
| 1895 | Nov 10      | 15.00  |       | 5.00    |
| 1895 | Nov 20      |        | 10.00 | 15.00   |
| 1895 | Nov 30      | 10.00  |       | 25.00   |
| 1895 | Dec 1       |        |       | 25.00   |
| 1895 | Dec 10      | 20.00  |       | 5.00    |
| 1895 | Dec 20      |        | 10.00 | 15.00   |
| 1895 | Dec 31      | 10.00  |       | 25.00   |



Wellington Bridge

|                    |     |
|--------------------|-----|
| Number of openings | 98  |
| Number of vessels  | 122 |

TABLE 4

Lengths of Roads and Bridle Paths in Reservations not Open to Motor Vehicles

|                             | Miles  |
|-----------------------------|--------|
| Blue Hills Reservation      | 79.08  |
| Middlesex Fells Reservation | 27.25  |
| Stony Brook Reservation     | 24.60  |
| Beaver Brook Reservation    | .22    |
| Charles River Reservation   | 4.39   |
| Hammond Pond Parkway        | 2.00   |
| Breakheart Reservation      | 7.00   |
|                             | 144.54 |

TABLE 5

Electric Street Lights on Parkways and Reservations

|   | Lights |
|---|--------|
| Alewife Brook Parkway (12-600 c.p., 36-800 c.p., 1-1500 c.p.)                 | 49     |
| Blue Hills Parkway (600 c.p.)   | 59     |
| Blue Hills Reservation, Hillside Street (80 c.p.)                             | 14     |
| Breakheart Reservation Entrance (2-800 c.p., 5-100 c.p.)                      | 7      |
| Charles River Dam, Reservation (1500 c.p.)                                    | 9      |
| Charles River Dam, Roadway (1000 c.p.)  | 20     |
| Charles River Reservation, Boston Embankment (250 c.p.)                       | 80     |
| Charles River Reservation, Embankment Road (2-100 c.p., 17-600 c.p.)          | 19     |
| Charles River Reservation, North Beacon Street (4-1500 c.p., 9-1000 c.p.)     | 13     |
| Charles River Reservation, Soldiers' Field Road (63-1000 c.p., 54-1500 c.p.)  | 117    |
| Dorchester Bay Bridge (1500 c.p.)   | 8      |
| Fresh Pond Parkway (15-250 c.p.)  | 15     |
| Furnace Brook Parkway (600 c.p.)  | 58     |
| General Edwards Bridge (800 c.p.)   | 24     |
| Harvard Bridge (600 c.p.)   | 24     |
| High Street Bridge (600 c.p.)   | 6      |
| Larz Anderson Bridge (100 c.p.)   | 24     |
| Lynn Fells Parkway (600 c.p.)   | 28     |
| Lynn Shore Reservation (4-1000 c.p., 44-600 c.p.)                             | 48     |
| Lynnway (1-1000 c.p., 16-800 c.p.)  | 17     |
| Memorial Drive (32-600 c.p., 200-250 c.p., 30-800 c.p.)                       | 262    |
| Middlesex Fells Parkway (7-1500 c.p., 229-600 c.p., 16-800 c.p.)              | 247    |
| Middlesex Fells Reservation (2-80 c.p., 35-250 c.p., 29-600 c.p., 1-800 c.p.) | 67     |
| Mystic Valley Parkway (1-250 c.p., 77-300 c.p., 87-800 c.p.)                  | 165    |
| Nahant Beach Parkway (600 c.p.)   | 16     |
| Nantasket Beach Reservation (1000 c.p.)                                       | 50     |
| Neponset Bridge (800 c.p.)  | 16     |
| Neponset Valley Parkway (600 c.p.)  | 21     |

<sup>1</sup> Seventeen all year until 1 A.M.  
<sup>2</sup> Three 600 c.p. June 1 to December 1.  
<sup>3</sup> Thirty-three 600 c.p. all year until 1 A.M. One 800 c.p. all year until 1 A.M.  
<sup>4</sup> Four June 1 to December 1.  
<sup>5</sup> Twelve June 1 to October 31. Seventeen in summer only.

|   | Lights |   |
|---|--------|---|
| Old Colony Parkway (42-1500 c.p., 20-1000 c.p., 18-800 c.p.) . . . . .    | 80     |   |
| Quannapowitt Parkway (800 c.p.) . . . . .                                 | 3      |   |
| Quincy Shore Boulevard (600 c.p.) . . . . .                               | 57     |   |
| Revere Beach Parkway (179-600 c.p., 19-800 c.p.) . . . . .                | 198    |   |
| Revere Beach Reservation (2-60 c.p., 1-250 c.p., 107-1500 c.p.) . . . . . | 110    | 6 |
| River Street Bridge (250 c.p.) . . . . .                                  | 8      |   |
| Weeks Bridge (100 c.p.) . . . . .   | 24     |   |
| Wellington Bridge (800 c.p.) . . . . .                                    | 22     |   |
| Western Avenue Bridge (250 c.p.) . . . . .                                | 8      |   |
| West Roxbury Parkway (21-600 c.p., 13-800 c.p., 2-1000 c.p.) . . . . .    | 36     |   |
| Winthrop Parkway (14-250 c.p., 7-600 c.p.) . . . . .                      | 21     |   |
| Winthrop Shore Reservation (600 c.p.) . . . . .                           | 23     |   |
| Woburn Parkway (600 c.p.) . . . . .                                       | 4      | 7 |
|   | <hr/>  |   |
|   | 2077   |   |

TABLE 6  
*Miles of Seashore*

|                           | Miles |
|---------------------------|-------|
| Lynn Shore . . . . .      | 1.50  |
| Nahant Beach . . . . .    | 2.93  |
| Nantasket Beach . . . . . | 1.02  |
| Quincy Shore . . . . .    | 2.19  |
| Revere Beach . . . . .    | 2.74  |
| Winthrop Shore . . . . .  | 1.71  |
|                           | <hr/> |
| TOTAL . . . . .           | 12.09 |

*Lengths of Sea Walls*

|  | Miles |
|--|-------|
| Lynn Shore . . . . .   | 1.30  |
| Nahant Beach Parkway, north of Wilson Road . . . . .                                 | .35   |
| Nantasket Beach Reservation . . . . .  | 1.02  |
| Quincy Shore Reservation, shore protection south of Webster Street . . . . .         | 1.08  |
| Quincy Shore Reservation, southerly end . . . . .                                    | .15   |
| Revere Beach at Eliot Circle . . . . .   | .15   |
| Revere Beach, at Northern Circle . . . . .   | .08   |
| Revere Beach, shore protection, south of Northern Circle . . . . .                   | .28   |
| Revere Beach, shore protection, bathhouse shelter to Revere Street shelter . . . . . | .29   |
| Winthrop Parkway, Revere and Winthrop, Broad Sound Avenue to Sewall Avenue . . . . . | .52   |
| Winthrop Shore, bridge to Great Head . . . . .                                       | 1.04  |
| Winthrop Shore, bridge to Grover's Cliff . . . . .                                   | .23   |
|  | <hr/> |
| TOTAL . . . . .  | 6.49  |

*Miles of River Bank*

|                          | Miles |
|--------------------------|-------|
| Alewife Brook . . . . .  | 4.50  |
| Charles River . . . . .  | 33.97 |
| Mystic River . . . . .   | 8.41  |
| Neponset River . . . . . | 15.86 |
|                          | <hr/> |
| TOTAL . . . . .          | 62.74 |

<sup>6</sup> Twenty-seven 1,500 c.p. all night, May 1 to October 31. Thirty-one 1,500 c.p. to midnight, June 1 to September 30. One 60 c.p. all night, May 1 to September 30.  
<sup>7</sup> Until 1 A.M.

TABLE 7

Bridges

|                                       |     |
|---------------------------------------|-----|
| Drawbridges . . . . .                 | 7   |
| Footbridges . . . . .                 | 14  |
| Reinforced concrete bridges . . . . . | 25  |
| Steel bridges . . . . .               | 19* |
| Stone masonry bridge . . . . .        | 1   |
| Wooden bridges . . . . .              | 5   |
| <hr/>                                 |     |
| TOTAL . . . . .                       | 71  |
| *Includes Memorial Drive Overpass.    |     |

Culverts

|  |    |
|--|----|
| Reinforced concrete and other masonry culverts . . . . . | 62 |
|--|----|

TABLE 8

|   |    |
|---|----|
| Beaver Brook Reservation, small wooden dams . . . . .   | 2  |
| Blue Hills Parkway, small wooden dam at Canton Avenue Circle . . . . .  | 1  |
| Blue Hills Reservation, small wooden dams at St. Moritz . . . . .   | 2  |
| Blue Hills Reservation, small concrete dam at Ponkapoag Pond . . . . .  | 1  |
| Breakheart Reservation, small concrete dams . . . . .   | 2  |
| Charles River Reservation, wooden dam at Watertown, 220 feet in length . . . . .  | 1  |
| Charles River Reservation, Charles River Basin, tidal dam 1,200 feet in length . . . . .  | 1  |
| Charles River Reservation, small stone dam in branch below Washington Street, Newton Lower Falls . . . . .                              | 1  |
| Charles River Reservation, reinforced concrete dam at Washington Street, Newton Lower Falls, 140 feet in length . . . . .               | 1  |
| Charles River Reservation, stone masonry dam with stop planks, at Moody Street Bridge, about 170 feet in length . . . . .               | 1  |
| Furnace Brook Parkway, reinforced concrete dam upstream from Black's Creek Bridge . . . . .   | 1  |
| Hemlock Gorge Reservation, small stone masonry dam with stop planks, in gorge . . . . .   | 1  |
| Hemlock Gorge Reservation, small reinforced concrete dam on east branch of River, Newton Upper Falls . . . . .                          | 1  |
| Hemlock Gorge Reservation, reinforced concrete dam in Charles River at Boylston Street, Newton Upper Falls, 90 feet in length . . . . . | 1  |
| Hemlock Gorge Reservation, small concrete dam at Reservoir Street . . . . .   | 1  |
| Mystic River Reservation, reinforced concrete tidal dam at Cradock Bridge, 100 feet in length, weirs 400 feet in length . . . . .       | 1  |
| <hr/>   |    |
| TOTAL . . . . .   | 19 |

Lock Gates, Sluice Gates and Tide Gates

- Charles River Reservation, Charles River Basin Tidal Dam, 6 lock gates, 13 sluice gates, 43 tide gates.
- Mystic River Reservation, Cradock Bridge Tidal Dam, 2 lock gates, 4 sluice gates, 8 tide gates.
- Quincy Shore Reservation, 8 tide gates.
- Old Colony Parkway, Tenean Street, 1 tide gate.
- Mystic Valley Parkway, 1200 feet west of Fellsway, 1 tide gate.
- Mystic Valley Parkway, 3000 feet west of Fellsway, 1 tide gate.



TABLE 9

## CONTRACTS MADE AND PENDING DURING

| Contract Number | WORK  | Number of Bids | Lowest      |
|-----------------|---|----------------|-------------|
|                 | Overpass and traffic circle at Cottage Farm Bridge, Cambridge, Section 2, traffic circle and approaches to bridges and overpass at Cottage Farm Bridge, Memorial Drive, Cambridge, P.W.A. Docket No. Mass. 1555-F, Mass. State Project No. D-210                  | 13             | \$85,626.16 |
|                 | Overpass and traffic circle at Cottage Farm Bridge, Cambridge, Section 3, construction of overpass at Cottage Farm Bridge, Memorial Drive, Cambridge, P.W.A. Docket No. Mass. 1555-F, Mass. State Project No. D-210   | 11             | 264,831.47  |
|                 | Road improvement near underpass at Columbia Circle, Old Colony Parkway, Dorchester District of Boston, Contract 2, reconstruction of overflow at Mt. Vernon Street, Old Colony Parkway, Dorchester, P.W.A. Docket No. Mass. 1512-F, Mass. State Project No. D-206 | 8              | 9,832.31    |
| 364             | Construction of sanitary building on Winthrop Shore Reservation at Mermaid Avenue, Winthrop   | 16             | 10,761.00   |
| 365             | Installing Albino Asphalt traffic lane markers in the Quincy Shore Reservation from Black's Creek Bridge approximately 1000 feet northerly  | 2              | 1,470.00    |
| 366             | Repairs to concrete draw piers and struts across ship channel at Neponset Bridge, Old Colony Parkway, Boston and Quincy   | 4              | 8,250.00    |
| 367             | Constructing drain on the Mystic Valley Parkway, Winchester, near the Aberjona River  | 12             | 2,473.00    |
| 368             | Furnishing and laying four-inch cement lined cast iron water pipe and miscellaneous work in Charles River Embankment, Boston  | 12             | 8,861.00    |
|                 | Traffic circle at West Roxbury Parkway and Centre Street, Contract 2, landscaping and fence construction, West Roxbury District of Boston, P.W.A. Docket No. Mass. 1510-F, Mass. State Project No. D-207  | 7              | 5,422.43    |
| 369             | Repairs to wearing surface and decking at Harvard Bridge, Charles River Reservation, Lower Basin, Boston and Cambridge  | 9              | 1,121.50    |
| 370             | Resurfacing a portion of Neponset Traffic Circle, Old Colony Parkway, in the Dorchester District of Boston  | 5              | 5,489.65    |
| 371             | Reconstruction of Mystic Valley Parkway from Culvert to High Street in Arlington  | 10             | 15,504.50   |
| 372             | Repairs to sea wall and roadway along Winthrop Shore Reservation, Neptune Avenue to Trident Ave., Winthrop  | 16             | 23,445.00   |
| 373             | Reconstruction of Memorial Drive from Boylston Street to Western Ave., Cambridge  | 10             | 31,770.50   |
| 374             | Painting the draw and drawtenders house at the Neponset River Bridge, Old Colony Parkway, Boston & Quincy   | 7              | 685.75      |
| 375             | Constructing bituminous concrete walks on Storrow Memorial Embankment from the Cottage Farm Bridge to Harvard Bridge, Boston  | 8              | 4,894.00    |
| 376             | Resurfacing Quannapowitt Parkway, Lowell Street to North Avenue, Wakefield  | 7              | 8,235.00    |
| 377             | Resurfacing North Beacon Street from Leo Birmingham Parkway 1900 feet northwesterly, Boston and Watertown   | 6              | 3,517.60    |
| 378             | Resurfacing the southerly side of Memorial Drive from Massachusetts Avenue 3700 feet easterly, Cambridge  | 6              | 7,865.10    |
| 379             | Resurfacing Woburn Parkway from Pleasant Street to Water Street, Woburn   | 3              | 827.50      |
|                 | Overpass and traffic circle at Cottage Farm Bridge, Cambridge, Contract 4, Landscaping at Cottage Farm Bridge, Memorial Drive, Cambridge, P.W.A. Docket No. Mass. 1555-F, Mass. State Project No. D-210   | 8              | 3,876.67    |
| 380             | Repairs to iron fence and sidewalk at Atlantic Bridge over the New York, New Haven & Hartford Railroad, Quincy Shore Reservation, Quincy  | 7              | 1,424.50    |
|                 | Reconstruction of northwesterly approach to Traffic Circle at Garfield Avenue, Revere Beach Parkway, Chelsea, P.W.A. Docket No. Mass. 1585-F, Mass. State Project No. D-209   | 8              | 12,564.38   |
| 381             | Dredging in Lechmere Canal and Broad Canal, Charles River Reservation, Lower Basin, Cambridge   | 4              | 7,300.00    |
| 382             | Repairs to bridge over the Boston and Maine Railroad (Central Massachusetts Branch) Alewife Brook Parkway, Cambridge  | 12             | 24,320.00   |
| 383             | Repairs to sea wall on Lynn Shore Reservation, Lynn and Swampscott, from Wave Street to Monument Square   | 5              | 1,516.50    |
| 384             | Repairs to decking and wearing surface at the Aberjona Bridge, Mystic Valley Parkway, Winchester  | 11             | 1,130.00    |
| 385             | Installing dam and sluice gate in small boat lock at the Charles River Dam, Charles River Reservation, Lower Basin, Cambridge, and incidental work  | 5              | 4,540.00    |
| 386             | Reconstruction of drainage system south of Baker Street, Veterans of Foreign Wars Parkway, West Roxbury   | 11             | 4,872.00    |
| 387             | Repairs to sidewalk, fence, and roadway at Harvard Bridge, Charles Reservation, Lower Basin Boston and Cambridge  | 4              | 3,016.00    |
| 388             | Repairs to sluice gates at the Charles River Dam, Charles River Reservation, Lower Basin, Cambridge   | 4              | 1,474.50    |

TABLE 9

THE YEAR 1939—PARKS DIVISION

| CONTRACTOR                               | Date of Contract | Date of Completion of Contract        | Value of Work Done Dec. 31, 1939 |
|--|------------------|---------------------------------------|----------------------------------|
| Walter Reed Corp. . . . .                | Jan. 5, 1939     | Nov. 29, 1939                         | \$101,950.21                     |
| Coleman Bros. Corp. . . . .              | Mar. 9, 1939     | —                                     | 272,658.96                       |
| Marinucci Bros. & Co. . . . .            | Mar. 16, 1939    | May 24, 1939                          | 9,088.54                         |
| Crane Construction Co. . . . .           | July 20, 1939    | Nov. 22, 1939                         | 11,061.00                        |
| Old Colony Crushed Stone Company . . . . | April 27, 1939   | June 22, 1939                         | 1,353.60                         |
| Crandall Eng. Co. . . . .                | May 11, 1939     | Aug. 28, 1939                         | 10,890.00                        |
| Appel & O'Toole Co. . . . .              | May 11, 1939     | Aug. 29, 1939                         | 3,263.00                         |
| Appel & O'Toole Co. . . . .              | May 11, 1939     | Aug. 5, 1939                          | 9,652.97                         |
| Thomas J. Godvin . . . . .               | June 26, 1939    | July 13, 1939                         | 5,451.27                         |
| Vulcan Construction Co. . . . .          | June 29, 1939    | July 22, 1939                         | 1,980.90                         |
| Samuel J. Tomasello Corp. . . . .        | July 6, 1939     | Aug. 2, 1939                          | 9,298.12                         |
| M. McDonough Corp. . . . .               | July 13, 1939    | —                                     | 22,450.15                        |
| Vincent Caira . . . . .                  | Aug. 17, 1939    | Nov. 28, 1939                         | 31,961.40                        |
| John P. Condon Corp. . . . .             | July 27, 1939    | Aug. 28, 1939                         | 31,922.45                        |
| Suffolk Eng. & Cont. Co. . . . .         | Aug. 10, 1939    | (Work being done by Bonding Company.) |                                  |
| John P. Condon Corp. . . . .             | Aug. 17, 1939    | Sept. 8, 1939                         | 4,707.01                         |
| M. McDonough Corp. . . . .               | Sept. 21, 1939   | Oct. 28, 1939                         | 9,675.12                         |
| Vulcan Construction Co. . . . .          | Sept. 7, 1939    | —                                     | 2,956.25                         |
| Warren Brothers Roads Co. . . . .        | Sept. 14, 1939   | Oct. 18, 1939                         | 8,685.15                         |
| Woburn Road Contractors Inc. . . . .     | Sept. 28, 1939   | Oct. 26, 1939                         | 781.44                           |
| Tree-Land Inc. . . . .                   | Oct. 11, 1939    | —                                     | 4,110.59                         |
| Progressive Iron Works Inc. . . . .      | Oct. 11, 1939    | —                                     | 945.80                           |
| Walter Reed Corp. . . . .                | Oct. 19, 1939    | Nov. 25, 1939                         | 13,159.09                        |
| George M. Bryne . . . . .                | Oct. 19, 1939    | —                                     | 2,430.00                         |
| Lee Construction Co. . . . .             | Oct. 26, 1939    | —                                     | 10,182.00                        |
| Charles Struzziery . . . . .             | Oct. 26, 1939    | Nov. 21, 1939                         | 1,484.19                         |
| Austin McDonald . . . . .                | Nov. 2, 1939     | Nov. 20, 1939                         | 1,130.00                         |
| Chandler Construction Co. . . . .        | Nov. 16, 1939    | —                                     | 3,075.00                         |
| Frank J. Jacobs Co. . . . .              | Nov. 9, 1939     | Dec. 8, 1939                          | 3,957.00                         |
| Vulcan Construction Co. . . . .          | Nov. 16, 1939    | —                                     | 2,004.50                         |
| *Boston Marine Works Inc. . . . .        | Nov. 27, 1939    | Dec. 27, 1939                         | 2,634.00                         |

\* Second lowest bidder.

Miscellaneous Data Relative To the Development and Patronage of the  
Park and Recreational Facilities of the Parks Division During the  
Calendar Year of 1939

| PARK STRUCTURES       |           |                    |                    | SPECIAL RECREATION FACILITIES |           |                                     |                    |
|-----------------------|-----------|--------------------|--------------------|-------------------------------|-----------|-------------------------------------|--------------------|
| TYPE                  | Total No. | No. Persons Served | Const. During 1937 | TYPE                          | Total No. | No. Active Participants During Year | Const. During 1937 |
| Bath Houses . . .     | 15        | 190,550            | 1                  | Athletic Fields               |           |                                     |                    |
| Boat Houses . . .     | 5         | 14,500             | —                  | (Track) . . .                 | 2         | 7,800                               | —                  |
| Lookout Towers . .    | 5         | 35,000             | —                  | Auto Parks . . .              | 32        | 6,200,000                           | 1                  |
| Refreshment Stands .  | 27        | 550,000            | —                  | Band Stands . . .             | 13        | 2,500                               | —                  |
| Solariums . . . . .   | 2         | 18,000             | —                  | Baseball Diamonds             | 14        | 13,650                              | —                  |
| Administration Bldgs. | 12        | —                  | —                  | Bathing Beaches               | 20        | 8,290,000                           | 1                  |
| Barns . . . . .       | 8         | —                  | —                  | Boy Scout Trails              | 2         | 39,200                              | —                  |
| Comfort Stations . .  | 35        | —                  | 2                  | Bridle Trails . . .           | 194       | 46,800                              | 5                  |
| Dwelling Houses . .   | 26        | —                  | —                  | Children's Play-              |           |                                     |                    |
| Garages . . . . .     | 20        | —                  | 1                  | grounds . . . . .             | 10        | 278,000                             | —                  |
| Greenhouses . . . .   | 1         | —                  | —                  | Dance Pavilions . .           | 2         | 3,000                               | —                  |
| Shelters . . . . .    | 90        | —                  | 4                  | Golf Courses—18               |           |                                     |                    |
| Work Shops . . . . .  | 20        | —                  | —                  | Hole . . . . .                | 2         | 57,574                              | —                  |

PARK DEVELOPMENT DURING 1938

| TYPE OF WORK DONE                   | Number  |
|-------------------------------------|---------|
| Areas Graded (in acres) . . . .     | 253     |
| Areas Planted (in acres) . . . .    | 126     |
| Auto Parks Const. (in acres) . . .  | 1       |
| Bridle Trails Const. (in miles) . . | 5       |
| Bulbs Planted . . . . .             | 3,125   |
| Curbing installed:                  |         |
| Concrete (linear feet) . . . . .    | 10      |
| Granite (linear feet) . . . . .     | 3,500   |
| Parkways Const. (in miles) . . . .  | —       |
| Plants Set Out . . . . .            | 2,700   |
| Roads Const. (in miles) . . . . .   | 1.38    |
| Sea Walls Const. (in linear feet) . | 4,640   |
| Shrubs Planted . . . . .            | 10,199  |
| Trees Planted:                      |         |
| Parkways . . . . .                  | 2,466   |
| Woodland . . . . .                  | 102,000 |
| Trees Sprayed:                      |         |
| Bridle Paths (in miles) . . . . .   | 202     |
| Parkways . . . . .                  | 46,300  |
| Roadside (in miles) . . . . .       | 105     |
| Woodland (in acres) . . . . .       | 2,185   |
| Trees Trimmed:                      |         |
| Bridle Paths (in miles) . . . . .   | 17      |
| Parkways . . . . .                  | 6,700   |
| Woodland (in acres) . . . . .       | 1,170   |
| Walks Const.:                       |         |
| Bituminous (in miles) . . . . .     | 8.75    |
| Concrete (in miles) . . . . .       | 1.0     |
| Gravel (in miles) . . . . .         | 5.5     |

| TYPE                      | Total No. | No. Active Participants During Year | Const. During 1937 |
|---------------------------|-----------|-------------------------------------|--------------------|
| Ice Hockey Rinks          | 5         | 29,000                              | 1                  |
| Ice Skating Areas         | 24        | 1,608,000                           | —                  |
| Music Shells . . . . .    | 1         | 3,000                               | —                  |
| Nature Trails . . . . .   | 2         | 26,000                              | —                  |
| Outdoor Fireplaces        | 71        | 239,300                             | 36                 |
| Picnic Centers            |           |                                     |                    |
| with drinking             |           |                                     |                    |
| water . . . . .           | 14        | 1,452,000                           | —                  |
| Picnic Centers            |           |                                     |                    |
| without drinking          |           |                                     |                    |
| water . . . . .           | 14        | 423,000                             | 3                  |
| Ski Jumps . . . . .       | 1         | 2,000                               | —                  |
| Ski Practice . . . . .    | —         | —                                   | —                  |
| Slopes . . . . .          | 4         | 49,000                              | —                  |
| Ski Trails . . . . .      | 2         | 15,000                              | —                  |
| Swimming Pools . . . . .  | —         | —                                   | —                  |
| Outdoor . . . . .         | 1         | 8,000                               | —                  |
| Tennis Courts . . . . .   | 20        | 199,200                             | 5                  |
| Toboggan Slides . . . . . | 2         | 16,000                              | —                  |

SPOT POND ZOO  
MIDDLESEX FELS RESERVATION

|                                    |         |
|------------------------------------|---------|
| Total Number of Acres . . . . .    | 8       |
| Number of Buildings . . . . .      | 2       |
| Number of Cages . . . . .          | 36      |
| Number of Mammals . . . . .        | 189     |
| Number of Birds . . . . .          | 366     |
| Number of Reptiles . . . . .       | 23      |
| Total Number of Specimens . . . .  | 578     |
| Total Number of Visitors . . . . . | 200,000 |



APPENDIX No. 3

Statistics of Police Department

MISCELLANEOUS WORK PERFORMED BY THE DEPARTMENT

|  |       |
|--|-------|
| Accidents reported                           | 2,010 |
| Assistance rendered other police departments | 171   |
| Buldings found open and secured              | 68    |
| Cases investigated                           | 328   |
| Dead bodies found                            | 27    |
| Defective streets reported                   | 58    |
| Defective sidewalks reported                 | 22    |
| Disturbances suppressed                      | 13    |
| Defective street lamps reported              | 1,613 |
| Fatal accidents                              | 9     |
| Fire alarms given                            | 78    |
| Fires extinguished without alarm             | 62    |
| Injured and sick persons assisted            | 2,372 |
| Insane persons cared for                     | 24    |
| Lost persons restored                        | 805   |
| Persons rescued from drowning                | 82    |
| Water running to waste                       | 41    |
| Fire alarms answered in cities and towns     | 52    |
| Gas leaks reported                           | 2     |
| Vessels assisted to anchorage                | 37    |
| Runaways                                     | 7     |
| Rescued from fire                            | 1     |

Not included in the above were seventy-six cases of wayward girls and delinquent boys which were handled by the policewoman without court action.

3903 operators were booked for minor infractions of the motor vehicle laws and warned without court action by officers of the Department. Some of these violations were referred to the Registrar of Motor Vehicles for action.

List of Offences

|                                     |     |
|-------------------------------------|-----|
| Attempted robbery                   | 1   |
| Assault with dangerous weapon       | 2   |
| Assault and battery                 | 37  |
| Breaking and entering               | 10  |
| Breaking and entering and larceny   | 2   |
| Breaking and entering in night time | 5   |
| Burglar tools in possession         | 4   |
| Breaking glass on public beach      | 2   |
| Cruelty to animals                  | 1   |
| Contempt of court                   | 3   |
| Contributing to delinquency         | 2   |
| Default warrants                    | 16  |
| Delinquency                         | 28  |
| Drunkenness                         | 597 |
| Demented persons                    | 2   |
| Defacing property                   | 13  |
| Escaped from State Institution      | 1   |
| False fire alarm                    | 1   |
| Forgery of checks                   | 4   |
| Conspiracy                          | 1   |
| Indecent exposure                   | 5   |
| Illegal resale of tickets           | 14  |
| Idle and disorderly persons         | 2   |
| Larceny                             | 55  |

|  |       |
|--|-------|
| Larceny, attempted . . . . .             | 9     |
| Larceny of auto . . . . .                | 3     |
| Lewdness . . . . .                       | 10    |
| Murder . . . . .                         | 1     |
| Manslaughter . . . . .                   | 1     |
| Non-support . . . . .                    | 1     |
| Obscene pictures in possession . . . . . | 1     |
| Robbery, armed . . . . .                 | 2     |
| Robbery . . . . .                        | 3     |
| Profanity . . . . .                      | 2     |
| Suspicious persons . . . . .             | 21    |
| Trespassing . . . . .                    | 3     |
| Unnatural act . . . . .                  | 2     |
| Uttering forged checks . . . . .         | 4     |
| Vagrancy . . . . .                       | 7     |
| Wayward child . . . . .                  | 1     |
| Violation of probation . . . . .         | 20    |
| Vagabond . . . . .                       | 1     |
| Crimes against public order . . . . .    | 82    |
|  | <hr/> |
|  | 982   |

*Offences Against the Motor Vehicle Laws*

|   |       |
|---|-------|
| Allowing improper person to operate. . . . .                    | 4     |
| Failing to stop at thru way . . . . .                           | 1     |
| Failing to stop for police officer . . . . .                    | 14    |
| Failing to stop for red light . . . . .                         | 4     |
| Failing to slow down at intersection . . . . .                  | 25    |
| Failing to slow down for pedestrian . . . . .                   | 2     |
| Giving false name . . . . .                                     | 1     |
| Impeding operation . . . . .                                    | 1     |
| Improper lights . . . . .                                       | 11    |
| Leaving scene of accident w/o making self known . . . . .       | 34    |
| Not duly licensed . . . . .                                     | 50    |
| No license in possession . . . . .                              | 23    |
| No registration in possession . . . . .                         | 22    |
| No certificate of inspection . . . . .                          | 29    |
| Operating on one-way street . . . . .                           | 1     |
| Operating under influence of intox. liquor . . . . .            | 148   |
| Operating so as to endanger lives and safety . . . . .          | 70    |
| Operating after revocation of registration . . . . .            | 1     |
| Operating uninsured motor vehicle . . . . .                     | 12    |
| Operating unregistered motor vehicle . . . . .                  | 13    |
| Operating at speed greater than reasonable and proper . . . . . | 61    |
| Operating without proper registration plates . . . . .          | 6     |
| Operating after revocation or suspension of license . . . . .   | 18    |
| Operating negligently . . . . .                                 | 6     |
| Parked at hydrant . . . . .                                     | 1     |
| Parked without lights . . . . .                                 | 2     |
| Reckless driving . . . . .                                      | 2     |
| Unnecessary noise . . . . .                                     | 1     |
| Using motor vehicle without authority . . . . .                 | 19    |
|   | <hr/> |
|   | 582   |

*Offences Against M.D.C. Rules and Regulations*

|   |     |
|---|-----|
| Violation of M.D.C. Rules, General . . . . .    | 128 |
| Violation of M.D.C. Rules, Automobile . . . . . | 108 |
| Violation of M.D.C. Rules, Speeding . . . . .   | 431 |

*Superior Court Dispositions*

|  |    |
|--|----|
| Fined . . . . .                          | 15 |
| House of Correction, suspended . . . . . | 2  |
| Filed . . . . .                          | 6  |
| Probation . . . . .                      | 4  |
| House of Correction, committed . . . . . | 10 |
| Concord Reformatory, committed . . . . . | 2  |
| Discharged . . . . .                     | 27 |
| Nol prossed . . . . .                    | 3  |
| Pending . . . . .                        | 20 |
| Fine suspended . . . . .                 | 1  |

*Lower Court Dispositions*

|   |     |
|---|-----|
| Appealed . . . . .                            | 82  |
| Adjudged delinquent . . . . .                 | 15  |
| Committed to Jail or H. C. . . . .            | 55  |
| Committed to State Farm . . . . .             | 12  |
| Committed to Shirley School . . . . .         | 1   |
| Committed to Lyman School . . . . .           | 3   |
| Committed to House of Good Shepherd . . . . . | 1   |
| Committed to Psycopathic Hospital . . . . .   | 5   |
| Committed to Insane Hospitals . . . . .       | 6   |
| Committed to Sherborn Reformatory . . . . .   | 3   |
| Cases pending . . . . .                       | 28  |
| Concord Reformatory, suspended . . . . .      | 4   |
| Concord Reformatory, committed . . . . .      | 2   |
| Dismissed . . . . .                           | 13  |
| Defaulted . . . . .                           | 19  |
| Default removed . . . . .                     | 2   |
| Drunks released . . . . .                     | 245 |
| Discharged . . . . .                          | 30  |
| Filed . . . . .                               | 452 |
| Fined . . . . .                               | 623 |
| Filed-cost of court . . . . .                 | 49  |
| Fine suspended . . . . .                      | 15  |
| Jail or H. C., suspended . . . . .            | 58  |
| Held for grand jury . . . . .                 | 5   |
| No probable cause . . . . .                   | 4   |
| Nol prossed . . . . .                         | 1   |
| Probation . . . . .                           | 65  |
| Restitution . . . . .                         | 7   |
| Suspicious persons released . . . . .         | 5   |
| Shirley School, suspended . . . . .           | 1   |
| State Farm, suspended . . . . .               | 1   |
| Turned over to other departments . . . . .    | 22  |
| Turned over to probation officer . . . . .    | 23  |
| Violation of probation . . . . .              | 14  |

*Fines Assessed by the Courts*

|  |          |
|--|----------|
| M.D.C. Rules, General . . . . .            | \$459.00 |
| M.D.C. Rules Motor Vehicle . . . . .       | 1,758.00 |
| Motor Vehicle Law—Public Statute . . . . . | 8,926.00 |
| General Laws . . . . .                     | 333.00   |
| Drunks . . . . .                           | 835.00   |
| Superior Court fines . . . . .             | 520.00   |

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 \$12,831.00



## APPENDIX No. 4

## CONTRACTS MADE AND PENDING DURING

| 1<br>Number of<br>Contract | 2<br>WORK  | 3<br>Number of<br>Bids | AMOUNT OF BID          |                           | 6<br>Contractor                                      |
|----------------------------|--|------------------------|------------------------|---------------------------|--|
|                            |  |                        | 4<br>Next to<br>Lowest | 5<br>Lowest               |  |
| 128* <sup>1</sup>          | Furnishing and laying water pipes in Dorchester District of Boston.  | 11                     | \$198,645.00           | \$187,617.50 <sup>2</sup> | M. De Matteo Construction Co., Boston.               |
| 129 <sup>1</sup>           | Furnishing additional chlorinator at Weston Reservoir.   | — <sup>3</sup>         | — <sup>3</sup>         | — <sup>3</sup>            | Wallace & Tiernan Co., Inc., Newark, N. J.           |
| 82-M <sup>1</sup>          | Furnishing and attaching brass wire netting to the pipe rail-fence on the Promenade of the Wachusett Dam in Clinton.           | 3                      | 6,956.00               | 4,865.00 <sup>2</sup>     | Oliver Whyte Company, Medford, Mass.                 |
| 83-M <sup>1</sup>          | Repairing timber bulkhead at Chelsea Creek in Chelsea.   | 5                      | 3,463.75               | 2,947.50 <sup>2</sup>     | M. & R. Construction Company, Boston.                |
| 84-M <sup>1</sup>          | Furnishing fuel economizers at Chestnut Hill Pumping Stations Nos. 1 and 2 in Boston.  | 1                      | —                      | 8,060.00 <sup>2</sup>     | The Green Fuel Economizer Co., Inc., Boston.         |
| 85-M <sup>1</sup>          | Repairs to North Dike Riprap of the Wachusett Reservoir in Clinton and Sterling, Damage caused by Hurricane of Sept. 21, 1938. | 4 <sup>4</sup>         | 11,760.00              | 9,450.00 <sup>5</sup>     | R. H. Newell Co., Uxbridge, Mass.                    |
| 86-M                       | Sale and purchase of electric energy to be developed at the Wachusett Dam in Clinton.  | — <sup>3</sup>         | — <sup>3</sup>         | — <sup>3</sup>            | New England Power Company and Boston Edison Company. |
| 87-M                       | Sale and purchase of electric energy to be developed at Sudbury Dam in Southborough.   | — <sup>3</sup>         | — <sup>3</sup>         | — <sup>3</sup>            | Boston Edison Company.                               |
| 88-M                       | Reconstructing Pipe Bridge over Boston and Main Railroad, Walnut Street, Somerville.   | 5                      | 2,629.00               | 2,490.00 <sup>2</sup>     | Groisser & Shlager Iron Works, Somerville, Mass.     |
| 89-M                       | Reconstructing Pipe Bridge over Boston and Maine Railroad, College Avenue, Medford.  | 5                      | 2,876.00               | 2,585.00 <sup>2</sup>     | Groisser & Shlager Iron Works, Somerville, Mass.     |
| 90-M <sup>1</sup>          | Furnishing and installing complete steam heating oil burning systems at 504 and 506 Wilson Street in Clinton.                  | 8                      | 1,350.00               | 1,325.00 <sup>2</sup>     | R. Maitland & Son, Clinton, Mass.                    |
| 91-M                       | Furnishing fuel economizers at Chestnut Hill Pumping Station No. 2 in Boston and Spot Pond Pumping Station in Stoneham.        | 1                      | —                      | 8,005.00 <sup>2</sup>     | The Green Fuel Economizer Co., Inc., Boston.         |
| 92-M                       | Reconstructing timber fender guard and repairing shaft guard at Chelsea Creek in East Boston.                                  | 5                      | 4,426.00               | 4,130.00 <sup>2</sup>     | M. & R. Construction Co., Boston.                    |
| 93-M <sup>1</sup>          | Insulating water pipe at Fox Hill Bridge in Saugus and Lynn.   | 3                      | 2,352.00               | 2,240.00 <sup>2</sup>     | National Engineering & Contracting Co., Boston.      |
| 94-M                       | Reconstructing pipe bridge over Boston and Maine Railroad on Webster Avenue, in Somerville.                                    | 3                      | 3,774.00               | 3,174.00 <sup>2</sup>     | West End Iron Works, Cambridge, Mass.                |

\* P.W.A. Docket No. Mass. 1516-F, Mass. State Project No. D-203.

<sup>1</sup> Contract completed.<sup>2</sup> Contract based upon this bid.

## THE YEAR 1939 — WATER DIVISION

| 7                | 8                              | 9  | 10                               |
|------------------|--------------------------------|--|----------------------------------|
| Date of Contract | Date of Completion of Contract | Prices of Principal Items of Contract  | Value of Work done Dec. 31, 1939 |
| Oct. 18, 1938    | Oct. 6, 1939                   | See Annual Report for 1938.  | \$223,377.59                     |
| May 18, 1939     | July 13, 1939                  | For furnishing one Manual Control Solution Feed Visible Vacuum Type Chlorinator of 100-pound capacity, A-255, ready for installation, \$1,675.00.  | 1,675.00                         |
| Nov. 16, 1938    | May 19, 1939                   | See Annual Report for 1938.  | 4,865.00                         |
| Nov. 29, 1938    | Mar. 31, 1939                  | See Annual Report for 1938.  | 2,955.50                         |
| Nov. 29, 1938    | Mar. 3, 1939                   | See Annual Report for 1938.  | 8,060.00                         |
| Nov. 22, 1938    | Feb. 27, 1939                  | See Annual Report for 1938.  | \$10,247.67                      |
| Dec. 1, 1938     | —                              | Sale and purchase of all electricity generated at the Wachusett Power Station with the exception of that used in connection with the operation of the Commission's Works in Wachusett Section and that supplied by the Commission to the Metropolitan District Water Supply Commission or its contractors. | 59,958.65                        |
| Dec. 1, 1938     | —                              | Sale and purchase of all electricity generated that is not used in connection with the operation of the Power Plant or supplied by the Commission to the Metropolitan District Water Supply Commission or its contractors.   | 35,543.88                        |
| Oct. 3, 1939     | —                              | For removing and disposing of the existing plate girder pipe bridge and constructing and erecting on the existing abutments a new truss pipe bridge, \$2,490.  | —                                |
| Nov. 24, 1939    | —                              | For removing and disposing of the existing plate girder pipe bridge and constructing and erecting on the existing abutments a new truss pipe bridge, \$2,585.  | —                                |
| Oct. 23, 1939    | Nov. 27, 1939                  | For furnishing and installing at 504 Wilson Street, Clinton, a complete steam heating oil burning system, \$672.50; and at 506 Wilson Street, Clinton, \$652.50.   | 1,325.00                         |
| Oct. 31, 1939    | —                              | For furnishing one fuel economizer and appurtenances, not including new sectional covers, and disposing of the existing fuel economizer at Chestnut Hill Pumping Station No. 2, \$3,939; and at Spot Pond Pumping Station, \$4,066.  | —                                |
| Nov. 14, 1939    | —                              | For furnishing and driving piles, \$1.45 per lin. ft.; for furnishing and placing timber, \$150 per M. ft. board measure; for furnishing and placing earth fill, \$.75 per cu. yd.; for additional work of removing a portion of existing fender and shaft guards, the lump sum of \$100.                  | 3,360.00                         |
| Nov. 23, 1939    | Dec. 16, 1939                  | For insulating 16-inch cast-iron water pipe, \$10.66 <sup>2</sup> / <sub>3</sub> per lin. ft.  | 2,186.67                         |
| Nov. 29, 1939    | —                              | For removing and disposing of the existing plate girder pipe bridge and constructing and erecting on the existing abutment and columns a new truss pipe bridge, \$3,174.   | —                                |

<sup>3</sup> Competitive bids were not received.<sup>4</sup> Includes two alternative bids.<sup>5</sup> Contract based upon this alternative bid.

## SPECIAL ORDERS MADE AND PENDING DURING

| 1<br>Number of<br>Special<br>Order | 2<br>TITLE AND LOCATION<br>OF WORK  | 3<br>Num-<br>ber of<br>Bids | AMOUNT OF BID          |                       | 6<br>Contractor                                   |
|------------------------------------|---|-----------------------------|------------------------|-----------------------|---|
|                                    |   |                             | 4<br>Next to<br>Lowest | 5<br>Lowest           |   |
| 1                                  | Furnishing and installing oil burning system at department house at 149 Capen Street, Somerville, Mass.                                   | 9                           | \$553.00               | \$517.00 <sup>1</sup> | Kelley Sales Corporation, Arlington, Mass.        |
| 2                                  | Furnishing and installing oil burning system at department office at 133 Hollis Street, Framingham.                                       | 12                          | 533.88                 | 513.00 <sup>1</sup>   | R. E. Eldridge, Framingham, Mass.                 |
| 3                                  | Furnishing feed water heater for Spot Pond Pumping Station, Stoneham, Mass.   | 3                           | 1,195.00               | 950.00 <sup>1</sup>   | Starkweather Engineering Co., Inc., Newton, Mass. |
| 4                                  | Glazing broken windows and furnishing and installing wire grills on all windows of Arlington Tower, Park Circle, Arlington Heights, Mass. | 6                           | \$927.00               | \$910.00 <sup>1</sup> | T. F. McGann & Sons Co., Boston.                  |
| 5                                  | Furnishing and installing oil burning system at department house at 196 Salem End Road, Framingham, Mass.                                 | 7                           | 524.00                 | 495.00 <sup>1</sup>   | The Heil Company, Boston.                         |
| 6                                  | Drilling an Artesian well on property of Isabelle M. Conklin, Sterling, Mass.   | 2                           | 199.25                 | 150.00 <sup>1</sup>   | Robert E. Chapman, Oakdale, Mass.                 |

<sup>1</sup> Special Order based upon this bid.



## THE YEAR 1939—WATER DIVISION

| 7                           | 8                                | 9   | 10                                     |
|-----------------------------|----------------------------------|---|--|
| Date of<br>Special<br>Order | Date of<br>Completion<br>of Work | Description of Work<br>under Special Order  | Value of<br>Work done<br>Dec. 31, 1939 |
| Oct. 13, 1939               | —                                | Furnishing, installing and connecting to the existing piping system an oil burning boiler, burner, two oil storage tanks, expansion pressure tank, control equipment and necessary accessories to furnish hot water heat to the existing piping and radiator system.                          | —                                      |
| Oct. 13, 1939               | —                                | Furnishing, installing and connecting to the existing piping system an oil burning boiler, burner, two oil storage tanks, expansion pressure tank, control equipment and necessary accessories to furnish hot water heat to the existing piping and radiator system.                          | —                                      |
| Oct. 30, 1939               | —                                | Furnishing a feed water heater.   | —                                      |
| Nov. 25, 1939               | —                                | Glazing broken windows and furnishing and installing wire grills on all windows.  | —                                      |
| Nov. 27, 1939               | —                                | Furnishing, installing and connecting to the existing piping system an oil burning boiler, burner, two oil storage tanks, expansion pressure tank, control equipment and necessary accessories to furnish properly and efficiently hot water heat to the existing piping and radiator system. | —                                      |
| Nov. 16, 1939               | —                                | Drilling a 6-inch Artesian well.  | —                                      |

## APPENDIX No. 5

TABLE No. 1 — Monthly Rainfall in inches at Various Places on the Metropolitan Water Works, 1939

|                              | January | February | March | April | May  | June | July | August | September | October | November | December | Totals |
|------------------------------|---------|----------|-------|-------|------|------|------|--------|-----------|---------|----------|----------|--------|
| Wachusett Watershed          |         |          |       |       |      |      |      |        |           |         |          |          |        |
| Princeton                    | 3.57    | 4.42     | 5.08  | 4.58  | 2.39 | 2.99 | 0.94 | 4.13   | 2.41      | 4.27    | 1.01     | 3.42     | 39.21  |
| Jefferson                    | 2.90    | 4.32     | 5.61  | 4.70  | 1.63 | 3.41 | 1.94 | 4.62   | 2.98      | 4.77    | 1.12     | 3.74     | 41.74  |
| Sterling                     | 2.70    | 3.66     | 4.97  | 4.54  | 2.34 | 3.42 | 1.29 | 2.66   | 2.26      | 4.50    | 1.15     | 3.17     | 36.66  |
| Boylston                     | 2.84    | 4.23     | 4.96  | 4.40  | 1.63 | 4.47 | 2.56 | 4.40   | 2.83      | 4.53    | 1.05     | 3.15     | 41.05  |
| Sudbury Watershed            |         |          |       |       |      |      |      |        |           |         |          |          |        |
| Sudbury Dam                  | 2.36    | 4.34     | 5.11  | 4.46  | 1.81 | 3.26 | 1.97 | 3.67   | 2.09      | 4.85    | 1.07     | 3.25     | 38.24  |
| Framingham                   | 2.54    | 4.29     | 4.93  | 4.56  | 1.40 | 3.91 | 1.79 | 4.41   | 1.78      | 5.27    | 1.12     | 3.39     | 39.39  |
| Ashland Dam                  | 2.39    | 4.22     | 4.45  | 4.53  | 1.57 | 3.47 | 3.20 | 4.59   | 1.84      | 5.04    | 1.01     | 3.20     | 39.51  |
| Cordaville                   | 2.80    | 4.54     | 4.85  | 4.79  | 1.58 | 3.91 | 1.10 | 4.15   | 1.89      | 5.64    | 1.10     | 3.15     | 39.50  |
| Lake Cochituate              | 2.45    | 4.51     | 5.63  | 4.93  | 1.64 | 3.83 | 1.58 | 4.71   | 1.69      | 5.96    | 1.24     | 3.67     | 41.84  |
| Chestnut Hill Reservoir      | 2.23    | 3.88     | 5.23  | 4.76  | 1.33 | 3.75 | 0.79 | 3.50   | 1.24      | 5.05    | 1.21     | 3.27     | 36.24  |
| Spot Pond                    | 2.90    | 4.03     | 5.73  | 4.93  | 2.11 | 2.86 | 0.35 | 2.34   | 1.87      | 4.96    | 1.13     | 3.40     | 36.61  |
| Average of All               | 2.70    | 4.22     | 5.14  | 4.65  | 1.77 | 3.57 | 1.59 | 3.92   | 2.08      | 4.99    | 1.11     | 3.35     | 39.09  |
| Average, Wachusett Watershed | 3.00    | 4.16     | 5.16  | 4.56  | 2.00 | 3.57 | 1.68 | 3.95   | 2.62      | 4.52    | 1.08     | 3.37     | 39.67  |
| Average, Sudbury Watershed   | 2.52    | 4.35     | 4.84  | 4.58  | 1.59 | 3.64 | 2.01 | 4.21   | 1.90      | 5.20    | 1.07     | 3.25     | 39.16  |

TABLE No. 2—*Rainfall in Inches at Chestnut Hill Reservoir — 1939*

| DATE          | AMOUNT            | DURATION                 | DATE          | AMOUNT            | DURATION                 |
|---------------|-------------------|--------------------------|---------------|-------------------|--------------------------|
| Jan. 2 . . .  | 0.02 <sup>2</sup> | 12.10 A.M. to 9.10 A.M.  | Apr. 1 . . .  | 0.67              | 9.30 P.M. to 3.00 P.M.   |
| Jan. 3 . . .  | 0.04 <sup>2</sup> | 10.30 A.M. to 2.00 A.M.  | Apr. 2 . . .  | 1.06              | 5.00 P.M. to 1.30 A.M.   |
| Jan. 4 . . .  | 0.74              | 11.40 P.M. to 3.30 P.M.  | Apr. 6 . . .  | 0.10 <sup>2</sup> | 11.15 P.M. to 2.00 P.M.  |
| Jan. 5 . . .  |                   | 7.15 A.M. to 1.15 P.M.   | Apr. 7 . . .  |                   | 6.45 P.M. to 11.30 P.M.  |
| Jan. 6 . . .  | 0.07 <sup>1</sup> | 7.10 A.M. to 11.30 P.M.  | Apr. 8 . . .  | 0.74 <sup>2</sup> | 9.25 P.M. to 10.00 P.M.  |
| Jan. 14 . . . | 0.08 <sup>1</sup> | 3.45 A.M. to 3.10 P.M.   | Apr. 9 . . .  |                   | 11.15 P.M. to 6.40 A.M.  |
| Jan. 19 . . . | 0.18              | 11.10 A.M. to 7.30 A.M.  | Apr. 10 . . . | 0.09              | 7.30 P.M. to 9.00 P.M.   |
| Jan. 22 . . . | 0.12 <sup>2</sup> | 4.15 P.M. to 9.30 P.M.   | Apr. 11 . . . | 1.85              | 5.50 A.M. to 11.40 P.M.  |
| Jan. 24 . . . | 0.95 <sup>2</sup> | 7.20 A.M. to 10.10 A.M.  | Apr. 12 . . . | 0.01              | 10.10 P.M. to 11.20 P.M. |
| Jan. 25 . . . |                   |                          | Apr. 14 . . . |                   |                          |
| Jan. 29 . . . | 0.03              |                          | Apr. 15 . . . |                   |                          |
| Jan. 30 . . . |                   |                          | Apr. 17 . . . |                   |                          |
| Jan. 31 . . . |                   |                          | Apr. 19 . . . |                   |                          |
| Total . . .   | 2.23              |                          | Apr. 26 . . . | 0.20              |                          |
|               |                   |                          | Apr. 27 . . . | 0.01              |                          |
| Feb. 3 . . .  | 0.53 <sup>2</sup> | 5.30 A.M. to 4.20 A.M.   | Total . . .   | 4.76              |                          |
| Feb. 4 . . .  | 0.24 <sup>2</sup> | 11.15 P.M. to 3.30 P.M.  | May 4 . . .   | 0.03              | 2.30 A.M. to 12.50 P.M.  |
| Feb. 6 . . .  |                   | 8.10 A.M. to 11.30 A.M.  | May 9 . . .   | 0.02              | 10.30 A.M. to 2.05 P.M.  |
| Feb. 7 . . .  | 0.55 <sup>2</sup> | 10.05 A.M. to 1.00 A.M.  | May 21 . . .  | 0.03              | 8.20 P.M. to 9.40 P.M.   |
| Feb. 10 . . . |                   | 3.00 P.M. to 11.30 P.M.  | May 22 . . .  | 0.53              | 10.10 A.M. to 11.20 P.M. |
| Feb. 11 . . . | 0.51              | 11.00 P.M. to 10.15 A.M. | May 23 . . .  | 0.16              | 7.45 P.M. to 11.30 P.M.  |
| Feb. 15 . . . | 0.24 <sup>2</sup> | 4.00 A.M. to 7.45 P.M.   | May 28 . . .  | 0.56              | 5.50 P.M. to 1.30 A.M.   |
| Feb. 16 . . . |                   | 12.55 P.M. to 3.30 A.M.  | May 29 . . .  |                   |                          |
| Feb. 19 . . . | 0.13              |                          | Total . . .   | 1.33              |                          |
| Feb. 21 . . . | 0.85              |                          | June 4 . . .  | 0.42              | 10.15 A.M. to 3.30 P.M.  |
| Feb. 22 . . . |                   |                          | June 10 . . . | 0.24              | 6.30 P.M. to 1.30 A.M.   |
| Feb. 26 . . . | 0.83              |                          | June 11 . . . | 1.37              | 11.30 P.M. to 2.35 P.M.  |
| Feb. 28 . . . |                   |                          | June 13 . . . |                   | 2.10 A.M. to 3.05 A.M.   |
| Mar. 1 . . .  |                   |                          | June 14 . . . | 0.01              | 2.55 A.M. to 11.30 A.M.  |
| Total . . .   | 3.88              |                          | June 16 . . . | 0.64              | 11.20 A.M. to 12.30 P.M. |
| Mar. 4 . . .  | 0.22              | 5.00 P.M. to 3.15 P.M.   | June 17 . . . | 0.01              | 5.10 A.M. to 4.20 P.M.   |
| Mar. 5 . . .  | 0.21              | 9.10 A.M. to 4.45 A.M.   | June 20 . . . | 0.23              | 11.20 P.M. to 2.30 P.M.  |
| Mar. 6 . . .  |                   | 6.30 P.M. to 8.55 P.M.   | June 23 . . . |                   | 5.10 A.M. to 3.05 P.M.   |
| Mar. 7 . . .  | 0.59 <sup>1</sup> | 6.10 P.M. to 2.10 P.M.   | June 24 . . . |                   |                          |
| Mar. 9 . . .  | 1.70 <sup>1</sup> | 5.45 P.M. to 8.20 A.M.   | June 25 . . . |                   |                          |
| Mar. 10 . . . |                   | 7.45 A.M. to 4.00 P.M.   | June 30 . . . | 0.47              |                          |
| Mar. 11 . . . | 1.39              | 4.15 A.M. to 7.30 P.M.   | Total . . .   | 3.75              |                          |
| Mar. 13 . . . |                   |                          |               |                   |                          |
| Mar. 15 . . . | 0.12              |                          |               |                   |                          |
| Mar. 16 . . . | 0.47 <sup>2</sup> |                          |               |                   |                          |
| Mar. 25 . . . |                   |                          |               |                   |                          |
| Mar. 26 . . . | 0.53              |                          |               |                   |                          |
| Mar. 27 . . . |                   |                          |               |                   |                          |
| Mar. 28 . . . |                   |                          |               |                   |                          |
| Mar. 30 . . . |                   |                          |               |                   |                          |
| Total . . .   | 5.23              |                          |               |                   |                          |

<sup>1</sup> Snow.  
<sup>2</sup> Rain and Snow.



TABLE NO. 2 — *Rainfall in Inches at Chestnut Hill Reservoir — 1939*

| DATE           | AMOUNT | DURATION                 | DATE          | AMOUNT            | DURATION                 |
|----------------|--------|--------------------------|---------------|-------------------|--------------------------|
| July 9 . . .   | 0.04   | 9.30 P.M. to 10.05 P.M.  | Oct. 1 . . .  | 0.47              | 1.00 P.M. to             |
| July 14 . . .  | 0.59   | 7.05 A.M. to 5.30 P.M.   | Oct. 2 . . .  |                   | 11.45 A.M.               |
| July 25 . . .  | 0.05   | 2.00 P.M. to 4.00 P.M.   | Oct. 3 . . .  | 0.49              | 7.40 A.M. to             |
| July 29 . . .  | 0.07   | 3.30 P.M. to             | Oct. 4 . . .  |                   | 6.45 A.M.                |
| July 30 . . .  |        | 6.30 A.M.                | Oct. 6 . . .  | 0.01              | 7.30 P.M. to 8.50 P.M.   |
| July 31 . . .  | 0.04   | 11.10 A.M. to 7.20 P.M.  | Oct. 9 . . .  | 0.04              | 12.15 A.M. to 2.30 A.M.  |
| Total . . .    | 0.79   |                          | Oct. 22 . . . | 0.07              | 12.30 A.M. to 2.10 P.M.  |
| Aug. 3 . . .   | 0.02   | 4.30 A.M. to 5.10 A.M.   | Oct. 25 . . . | 0.21              | 8.45 P.M. to             |
| Aug. 4 . . .   | 1.19   | 2.45 P.M. to 11.30 P.M.  | Oct. 26 . . . |                   | 3.30 P.M.                |
| Aug. 9 . . .   | 0.02   | 7.00 P.M. to 8.00 P.M.   | Oct. 27 . . . | 0.19              | 2.15 P.M. to             |
| Aug. 13 . . .  | 0.05   | 9.20 P.M. to 11.30 P.M.  | Oct. 28 . . . |                   | 1.00 P.M.                |
| Aug. 17 . . .  | 0.17   | 1.05 A.M. to 3.50 A.M.   | Oct. 31 . . . | 3.57              | 2.40 A.M. to 11.30 P.M.  |
| Aug. 20 . . .  | 1.00   | 6.10 A.M. to 6.10 P.M.   | Total . . .   | 5.05              |                          |
| Aug. 25 . . .  | 0.49   | 12.40 P.M. to 10.45 P.M. | Nov. 5 . . .  | 1.18              | 12.20 P.M. to 12.30 A.M. |
| Aug. 29 . . .  | 0.16   | 3.00 P.M. to 10.20 P.M.  | Nov. 6 . . .  | 0.03              | 7.05 A.M. to 3.30 P.M.   |
| Aug. 30 . . .  | 0.40   | 8.10 A.M. to             | Nov. 22 . . . |                   |                          |
| Aug. 31 . . .  |        | 11.20 A.M.               | Total . . .   | 1.21              |                          |
| Total . . .    | 3.50   |                          | Dec. 2 . . .  | 1.12              | 6.10 A.M. to             |
| Sept. 5 . . .  | 0.07   | 1.15 P.M. to 3.10 P.M.   | Dec. 3 . . .  |                   | 4.00 A.M.                |
| Sept. 8 . . .  | 0.11   | 10.05 A.M. to 3.45 P.M.  | Dec. 10 . . . | 0.46 <sup>2</sup> | 2.40 P.M. to 8.10 P.M.   |
| Sept. 10 . . . | 0.09   | 1.45 P.M. to 11.30 P.M.  | Dec. 11 . . . |                   | 8.10 P.M.                |
| Sept. 21 . . . | 0.08   | 1.30 A.M. to 3.30 A.M.   | Dec. 13 . . . | 0.08              | 6.30 P.M. to 9.45 P.M.   |
| Sept. 26 . . . | 0.63   | 3.30 P.M. to             | Dec. 17 . . . | 0.01              | 12.15 P.M. to 3.10 P.M.  |
| Sept. 28 . . . |        | 2.50 A.M.                | Dec. 19 . . . | 1.16              | 10.00 P.M. to            |
| Oct. 1 . . .   | 0.26   | 1.30 A.M. to 5.20 A.M.   | Dec. 21 . . . |                   | 6.50 A.M.                |
| Total . . .    | 1.24   |                          | Dec. 30 . . . | 0.44 <sup>1</sup> | 1.30 A.M. to 1.45 P.M.   |
|                |        |                          | Total . . .   | 3.27              |                          |

<sup>1</sup> Snow.<sup>2</sup> Rain and Snow.

Total for the year, 36.24.

TABLE No. 3.—*Wachusett System — Statistics of Flow of Water, Storage and Rainfall in 1939*

(Watershed above dam = 107.69 square miles)

| MONTH       | GALLONS PER DAY                             |                                       |  |  |  |                                      |  |                      | Rainfall Col-lected (Inches) | Percent-<br>age of<br>Rainfall Col-<br>lected |                                |       |
|-------------|---|---------------------------------------|--|--|--|--------------------------------------|--|----------------------|------------------------------|---|--------------------------------|-------|
|             | Taken <sup>1</sup> by Town<br>of<br>Clinton | Taken<br>by City<br>of Wor-<br>cester | Received<br>from<br>Ware<br>River<br>Watershed | Received <sup>2</sup><br>from<br>City of<br>Worcester<br>Watershed | Discharged <sup>3</sup><br>into<br>Wachusett<br>Aqueduct | Wasted<br>into River<br>below<br>Dam | Seepage <sup>4</sup><br>through<br>the North<br>Dike | STORAGE <sup>5</sup> |                              |   | Yield<br>per<br>Square<br>Mile |       |
|             |   |                                       |  |  |  |                                      |  | Gain                 |                              |   |                                | Loss  |
| January .   | —   | —                                     | —  | 12 313,000   | 131,484,000  | 54,487,000                           | 1,000,000  | —                    | 34,397,000                   | 1,302,000                                     | 3.00                           | 77.4  |
| February .  | —   | —                                     | —  | 3,825,000  | 121,493,000  | 4,682,000                            | 961,000  | 42,325,000           | —                            | 1,538,000                                     | 4.16                           | 59.6  |
| March .     | —   | —                                     | —  | 25,681,000   | 145,568,000  | 155,852,000                          | 1,000,000  | 20,926,000           | —                            | 2,764,000                                     | 5.16                           | 95.6  |
| April .     | —   | —                                     | —  | 30,983,000   | 121,700,000  | 283,810,000                          | 1,000,000  | 16,373,000           | —                            | 3,639,000                                     | 4.56                           | 137.9 |
| May .       | 674,000                                     | —                                     | 12,680,000                                     | 3,510,000  | 152,523,000  | 2,390,000                            | 1,000,000  | —                    | 27,810,000                   | 1,045,000                                     | 2.00                           | 93.4  |
| June .      | 916,000                                     | —                                     | —  | —  | 132,350,000  | 1,860,000                            | 983,000  | —                    | 65,356,000                   | 657,000                                       | 3.57                           | 31.8  |
| July .      | 1,010,000                                   | —                                     | —  | —  | 151,329,000  | 1,729,000                            | 913,000  | —                    | 122,274,000                  | 304,000                                       | 1.68                           | 32.2  |
| August .    | 971,000                                     | —                                     | —  | —  | 170,139,000  | 1,697,000                            | 884,000  | —                    | 138,439,000                  | 327,000                                       | 3.95                           | 14.8  |
| September . | 957,000                                     | —                                     | —  | —  | 146,506,000  | 1,713,000                            | 800,000  | —                    | 125,233,000                  | 230,000                                       | 2.62                           | 15.1  |
| October .   | 932,000                                     | —                                     | —  | —  | 99,190,000   | 1,716,000                            | 755,000  | —                    | 67,303,000                   | 328,000                                       | 4.52                           | 12.9  |
| November .  | 950,000                                     | —                                     | 4,380,000                                      | —  | 126,584,000  | 1,723,000                            | 700,000  | —                    | 74,850,000                   | 471,000                                       | 1.08                           | 75.1  |
| December .  | 942,000                                     | —                                     | 332,000  | —  | 125,710,000  | 1,703,000                            | 700,000  | —                    | 63,065,000                   | 610,000                                       | 3.37                           | 32.3  |
| Total .     |   |                                       |  |  |  |                                      |  |                      |                              |   | 39.67                          | 58.0  |
| Av. for Yr. | 617,000                                     | —                                     | 1,465,000                                      | 6,365,000  | 135,534,000  | 42,770,000                           | 891,000  | —                    | 53,945,000                   | 1,096,000                                     | 23.021                         |       |

<sup>1</sup> For water supply of Clinton and Lancaster.  
<sup>2</sup> Received from City of Worcester Watershed, not included in Wachusett watershed yield.  
<sup>3</sup> Including 248,000 gallons per day drawn from aqueduct for supply of Westborough State Hospital.  
<sup>4</sup> Estimated.  
<sup>5</sup> Aggregate storage in Wachusett Reservoir and in ponds and mill reservoirs.

TABLE No. 4. — *Sudbury System — Statistics of Flow of Water, Storage and Rainfall in 1939*

(Watershed = 75.2 square miles)

| MONTH       | GALLONS PER DAY                          |   |  |                                      |   |                             |  |            |            |                          | Rain-fall Col-lected (In-ches) | Percent-age of Rainfall Col-lected |                       |       |
|-------------|--|---|--|--------------------------------------|---|-----------------------------|--|------------|------------|--------------------------|--------------------------------|------------------------------------|-----------------------|-------|
|             | Water* received from Wachusett Reservoir | Water discharged through Sudbury Aqueduct | Water discharged through Weston Aqueduct | Water used by Framingham Water Works | Water diverted from Watershed by Sewers, etc. | Water wasted from Farm Pond | Water wasted into River below Lowest Dam | STORAGE    |            | Total Yield of Watershed |                                |                                    | Yield per Square Mile |       |
|             |  |   |  |                                      |   |                             |  | Gain       | Loss       |                          |                                |                                    |                       |       |
| January     | 131,238,000                              | 20,529,000                                | 114,103,000                              | 1,439,000                            | 719,000                                       | 58,000                      | 55,810,000                               | 4,903,000  | —          | 66,323,000               | 882,000                        | 2.52                               | 1,573                 | 62.3  |
| February    | 121,246,000                              | 18,503,000                                | 110,886,000                              | 1,521,000                            | 793,000                                       | 411,000                     | 101,700,000                              | 9,171,000  | —          | 121,739,000              | 1,619,000                      | 4.35                               | 2,608                 | 60.0  |
| March       | 145,319,000                              | 16,471,000                                | 107,816,000                              | 1,471,000                            | 1,571,000                                     | 897,000                     | 211,919,000                              | —          | 17,232,000 | 177,594,000              | 2,362,000                      | 4.84                               | 4,213                 | 87.1  |
| April       | 121,456,000                              | 12,803,000                                | 105,904,000                              | 1,360,000                            | 2,403,000                                     | 963,000                     | 224,217,000                              | 1,673,000  | —          | 227,867,000              | 3,030,000                      | 4.58                               | 5,231                 | 114.1 |
| May         | 152,271,000                              | 16,000,000                                | 114,426,000                              | 1,439,000                            | 674,000                                       | 26,000                      | 37,406,000                               | 31,981,000 | —          | 49,681,000               | 661,000                        | 1.59                               | 1,178                 | 74.1  |
| June        | 132,090,000                              | 20,477,000                                | 113,357,000                              | 1,546,000                            | 296,000                                       | —                           | 13,430,000                               | —          | 2,366,000  | 14,650,000               | 195,000                        | 3.64                               | 0,336                 | 9.2   |
| July        | 151,067,000                              | 26,445,000                                | 118,990,000                              | 1,864,000                            | 213,000                                       | —                           | 3,929,000                                | —          | 7,003,000  | —6,629,000               | —88,000                        | 2.01                               | —0,157                | —7.8  |
| August      | 169,868,000                              | 27,210,000                                | 124,074,000                              | 1,723,000                            | 106,000                                       | —                           | 21,487,000                               | —          | 6,103,000  | —1,371,000               | —18,000                        | 4.21                               | —0,033                | —0.8  |
| September   | 146,257,000                              | 21,617,000                                | 122,993,000                              | 1,593,000                            | 210,000                                       | —                           | 7,217,000                                | —          | 8,610,000  | —1,237,000               | —16,000                        | 1.90                               | —0,028                | —1.5  |
| October     | 98,951,000                               | 21,013,000                                | 108,390,000 <sup>1</sup>                 | 1,529,000                            | 255,000                                       | —                           | 1,516,000                                | —          | 20,400,000 | 13,352,000               | 178,000                        | 5.20                               | 0,317                 | 6.1   |
| November    | 126,347,000                              | 18,967,000                                | 117,997,000 <sup>2</sup>                 | 1,323,000                            | 340,000                                       | —                           | 12,203,000                               | —          | —          | 24,270,000               | 323,000                        | 1.07                               | 0,557                 | 51.8  |
| December    | 125,481,000                              | 18,355,000                                | 117,300,000                              | —                                    | 423,000                                       | —                           | 8,948,000                                | 8,658,000  | —          | 28,203,000               | 375,000                        | 3.25                               | 0,669                 | 20.6  |
| Total       |  |   |  |                                      |   |                             |  |            |            |                          |                                | 39.16                              | 16,464                | 42.0  |
| Av. for Yr. | 135,286,000                              | 19,892,000                                | 114,714,000                              | 1,399,000                            | 664,000                                       | 194,000                     | 57,893,000                               | —          | 520,000    | 58,950,000               | 784,000                        |                                    |                       |       |

\*Not including 248,000 gallons per day drawn from Wachusett Aqueduct for the supply of the Westborough State Hospital, not discharged into Sudbury Reservoir.

<sup>1</sup> Includes 39,000 gallons per day wasted cleaning aqueduct.<sup>2</sup> Includes 1,130,000 gallons per day wasted cleaning aqueduct.



TABLE No. 5.—*Cochituate System — Statistics of Flow of Water, Storage and Rainfall in 1939*  
(Watershed of Lake = 17.40 square miles)

| MONTH                      | GALLONS PER DAY                                  |   |   |            |           | Rainfall<br>Collected<br>(Inches) | Percent-<br>age of<br>Rainfall |                                |
|----------------------------|--|---|---|------------|-----------|-----------------------------------|--------------------------------|--------------------------------|
|                            | Water<br>received<br>from<br>Sudbury<br>Aqueduct | Water<br>diverted<br>from Water-<br>shed by<br>Sewers, etc. | Water<br>wasted at<br>Outlet<br>of Lake | STORAGE    |           |                                   |                                | Yield<br>per<br>Square<br>Mile |
|                            |  |   |   | Gain       | Loss      |                                   |                                |                                |
| January . . . . .          | —  | 1,348,000   | 14,123,000                              | —          | 839,000   | 14,632,000                        | 841,000                        | 61.2                           |
| February . . . . .         | —  | 1,339,000   | 13,475,000                              | 14,672,000 | —         | 29,486,000                        | 1,695,000                      | 60.5                           |
| March . . . . .            | —  | 2,142,000   | 50,203,000                              | —          | 8,432,000 | 43,913,000                        | 2,524,000                      | 80.0                           |
| April . . . . .            | —  | 3,020,000   | 54,230,000                              | —          | 6,040,000 | 51,210,000                        | 2,943,000                      | 103.1                          |
| May . . . . .              | —  | 1,790,000   | 3,871,000                               | 8,187,000  | —         | 13,848,000                        | 796,000                        | 86.6                           |
| June . . . . .             | —  | 916,000   | 6,147,000                               | —          | 1,773,000 | 5,290,000                         | 304,000                        | 13.7                           |
| July . . . . .             | —  | 406,000   | 3,510,000                               | —          | 2,348,000 | 1,568,000                         | 90,000                         | 10.2                           |
| August . . . . .           | —  | 565,000   | 4,352,000                               | —          | 1,052,000 | 3,865,000                         | 222,000                        | 8.4                            |
| September . . . . .        | —  | 554,000   | —                                       | 153,000    | —         | 707,000                           | 41,000                         | 4.1                            |
| October . . . . .          | —  | 568,000   | —                                       | 4,429,000  | —         | 4,997,000                         | 287,000                        | 8.6                            |
| November . . . . .         | —  | 1,083,000   | 14,767,000                              | —          | 7,137,000 | 8,713,000                         | 501,000                        | 69.7                           |
| December . . . . .         | —  | 774,000   | 2,161,000                               | 5,949,000  | —         | 8,884,000                         | 511,000                        | 24.8                           |
| Total . . . . .            |  |   |   |            |           |                                   |                                | 44.6                           |
| Average for Year . . . . . | —  | 1,206,000   | 13,853,000                              | 410,000    | —         | 15,469,000                        | 889,000                        | —                              |

TABLE NO. 6.—Sources from which and Periods during which Water has been drawn for the Supply of the Metropolitan Water District in 1939  
*From Wachusett Reservoir into the Wachusett Aqueduct*

| MONTH               | Number of Days during which Water was Flowing | ACTUAL TIME |         | * Million Gallons Drawn |
|---------------------|---|-------------|---------|-------------------------|
|                     |   | Hours       | Minutes |                         |
| January . . . . .   | 25  | 279         | 20      | 4,076.0                 |
| February . . . . .  | 23  | 233         | 10      | 3,401.8                 |
| March . . . . .     | 27  | 306         | 45      | 4,512.6                 |
| April . . . . .     | 24  | 249         | 30      | 3,651.0                 |
| May . . . . .       | 26  | 322         | 49      | 4,728.2                 |
| June . . . . .      | 26  | 271         | 40      | 3,970.5                 |
| July . . . . .      | 25  | 321         | 05      | 4,691.2                 |
| August . . . . .    | 26  | 375         | 55      | 5,274.3                 |
| September . . . . . | 25  | 322         | 05      | 4,395.2                 |
| October . . . . .   | 17  | 222         | 55      | 3,074.9                 |
| November . . . . .  | 24  | 322         | 45      | 3,797.5                 |
| December . . . . .  | 25  | 322         | 05      | 3,897.0                 |
| Totals . . . . .    | 293   | 147.92 days |         | 49,470.2                |

\*Including quantity supplied Westborough State Hospital.

*From Sudbury Reservoir through the Weston Aqueduct to Weston Reservoir*

| MONTH               | Number of Days during which Water was Flowing | ACTUAL TIME  |         | Million Gallons Drawn |
|---------------------|---|--------------|---------|-----------------------|
|                     |   | Hours        | Minutes |                       |
| January . . . . .   | 31  | 744          | 00      | 3,537.2               |
| February . . . . .  | 28  | 671          | 00      | 3,104.8               |
| March . . . . .     | 31  | 729          | 30      | 3,342.3               |
| April . . . . .     | 30  | 718          | 30      | 3,177.1               |
| May . . . . .       | 31  | 743          | 40      | 3,547.2               |
| June . . . . .      | 30  | 719          | 30      | 3,400.7               |
| July . . . . .      | 31  | 742          | 12      | 3,688.7               |
| August . . . . .    | 31  | 743          | 33      | 3,846.3               |
| September . . . . . | 30  | 720          | 33      | 3,689.8               |
| October . . . . .   | 31  | 721          | 00      | 3,358.9               |
| November . . . . .  | 30  | 713          | 45      | 3,506.0               |
| December . . . . .  | 31  | 713          | 50      | 3,636.3               |
| Totals . . . . .    | 365   | 361.710 days |         | 41,835.3              |

*From Framingham Reservoir No. 3 through Sudbury Aqueduct to Chestnut Hill Reservoir*

| MONTH               | Number of Days during which Water was Flowing | ACTUAL TIME |         | Million Gallons Drawn |
|---------------------|---|-------------|---------|-----------------------|
|                     |   | Hours       | Minutes |                       |
| January . . . . .   | 31  | 744         | 00      | 636.4                 |
| February . . . . .  | 28  | 672         | 00      | 518.1                 |
| March . . . . .     | 31  | 744         | 00      | 510.6                 |
| April . . . . .     | 30  | 719         | 00      | 384.1                 |
| May . . . . .       | 31  | 744         | 00      | 496.0                 |
| June . . . . .      | 30  | 720         | 00      | 614.3                 |
| July . . . . .      | 31  | 744         | 00      | 819.8                 |
| August . . . . .    | 31  | 744         | 00      | 843.5                 |
| September . . . . . | 30  | 721         | 00      | 648.5                 |
| October . . . . .   | 31  | 744         | 00      | 651.4                 |
| November . . . . .  | 30  | 720         | 00      | 569.0                 |
| December . . . . .  | 31  | 744         | 00      | 569.0                 |
| Totals . . . . .    | 365   | 365.0 days  |         | 7,260.7               |

TABLE No. 7 — *Average Daily Quantity of Water Flowing through  
Aqueducts in 1939 by Months*

| MONTH               | Wachusett<br>Aqueduct<br>into<br>Sudbury<br>Reservoir<br>(Gallons) | Weston<br>Aqueduct<br>into<br>Metropolitan<br>District<br>(Gallons) | Sudbury<br>Aqueduct<br>into<br>Chestnut Hill<br>Reservoir<br>(Gallons) | Cochituate<br>Aqueduct<br>into<br>Chestnut Hill<br>Reservoir<br>(Gallons) |
|---------------------|--|---|--|---|
| January . . . . .   | 131,238,000  | 114,103,000   | 20,529,000   | —   |
| February . . . . .  | 121,246,000  | 110,886,000   | 18,503,000   | —   |
| March . . . . .     | 145,319,000  | 107,816,000   | 16,471,000   | —   |
| April . . . . .     | 121,456,000  | 105,904,000   | 12,803,000   | —   |
| May . . . . .       | 152,271,000  | 114,426,000   | 16,000,000   | —   |
| June . . . . .      | 132,090,000  | 113,357,000   | 20,477,000   | —   |
| July . . . . .      | 151,067,000  | 118,990,000   | 26,445,000   | —   |
| August . . . . .    | 169,868,000  | 124,074,000   | 27,210,000   | —   |
| September . . . . . | 146,257,000  | 122,993,000   | 21,617,000   | —   |
| October . . . . .   | 98,951,000   | 108,351,000   | 21,013,000   | —   |
| November . . . . .  | 126,347,000  | 116,867,000   | 18,967,000   | —   |
| December . . . . .  | 125,481,000  | 117,300,000   | 18,355,000   | —   |
| Average . . . . .   | 135,286,000  | 114,617,000   | 19,892,000   | —   |



TABLE No. 8.—(Meter Basis). *Average Daily Consumption of Water by Districts in the Cities and Towns Supplied by the Metropolitan Water Works in 1939*

| MONTH                  | LOW SERVICE   | SOUTHERN HIGH SERVICE   | INTERMEDIATE HIGH SERVICE                              | NORTHERN HIGH SERVICE   | SOUTHERN EXTRA HIGH SERVICE             | NORTHERN EXTRA HIGH SERVICE                               | Total District Supplied (Gallons) | Estimated Population | Consumption per Inhabitant (Gallons) |
|------------------------|---|---|--|---|---|---|-----------------------------------|----------------------|--------------------------------------|
|                        | Portions of Arlington, Belmont, Boston, Chelsea, Everett, Malden, Medford, Somerville and Watertown (Gallons) | Quincy and Portions of Boston, Milton and Watertown (Gallons) | Portions of Arlington, Belmont and Watertown (Gallons) | Melrose, Nahant, Revere, Stoneham, Swampscott and Winthrop and Portions of Boston, Chelsea, Everett, Malden, Medford and Somerville (Gallons) | Portions of Boston and Milton (Gallons) | Lexington and Portions of Arlington and Belmont (Gallons) |                                   |                      |                                      |
| January                | 70,409,600  | 47,477,100  | 1,049,500  | 12,501,200  | 1,596,800                               | 1,813,100   | 134,847,300                       | 1,470,850            | 92                                   |
| February               | 68,208,600  | 47,220,000  | 1,057,600  | 12,400,800  | 1,575,200                               | 1,832,800   | 132,295,000                       | 1,471,660            | 90                                   |
| March                  | 65,766,500  | 46,127,300  | 1,048,700  | 12,359,800  | 1,587,800                               | 1,857,400   | 128,747,500                       | 1,472,470            | 87                                   |
| April                  | 64,296,900  | 44,508,200  | 1,049,300  | 12,306,600  | 1,546,600                               | 1,866,200   | 125,573,800                       | 1,473,290            | 85                                   |
| May                    | 63,954,300  | 45,360,800  | 1,319,600  | 12,878,500  | 1,740,300                               | 2,150,600   | 127,404,100                       | 1,474,100            | 86                                   |
| June                   | 68,425,000  | 47,686,200  | 1,361,200  | 13,926,600  | 1,983,100                               | 2,408,500   | 135,790,600                       | 1,474,920            | 92                                   |
| July                   | 73,384,800  | 50,949,400  | 1,734,700  | 16,409,100  | 2,294,300                               | 3,216,800   | 147,989,100                       | 1,475,730            | 100                                  |
| August                 | 74,132,500  | 51,817,500  | 1,488,800  | 15,503,200  | 2,047,300                               | 2,615,000   | 147,604,300                       | 1,476,540            | 100                                  |
| September              | 70,558,300  | 48,354,300  | 1,430,100  | 14,380,900  | 1,868,800                               | 2,601,000   | 139,193,400                       | 1,477,350            | 94                                   |
| October                | 69,346,800  | 47,534,600  | 1,335,200  | 13,515,500  | 1,771,200                               | 1,888,700   | 135,392,000                       | 1,478,170            | 92                                   |
| November               | 69,441,800  | 46,160,500  | 1,483,100  | 12,759,600  | 1,762,500                               | 1,829,600   | 133,437,100                       | 1,478,970            | 90                                   |
| December               | 71,750,100  | 46,753,400  | 1,352,500  | 12,407,000  | 1,747,200                               | 1,821,600   | 135,837,800                       | 1,479,790            | 92                                   |
| For the Year . . . . . | 69,157,900  | 47,507,500  | 1,311,000  | 13,455,300  | 1,795,300                               | 2,160,900   | 135,387,900                       | 1,475,730            | 92                                   |

TABLE No. 9. — (Meter Basis). Average Daily Consumption of Water in Cities and Towns supplied by the Metropolitan Water Works in 1939

| City or Town | ARLINGTON | BELMONT    | BOSTON     | CHELSEA    | EVERETT   | LEXINGTON  | MALDEN    |            |
|--------------|-----------|------------|------------|------------|-----------|------------|-----------|------------|
| Population   | 40,860    | 27,740     | 852,310    | 39,680     | 46,110    | 12,080     | 56,560    |            |
| MONTH        | Gallons   |            | Gallons    |            | Gallons   |            | Gallons   |            |
|              | Per Day   | Per Capita | Per Day    | Per Capita | Per Day   | Per Capita | Per Day   | Per Capita |
|              |           |            |            |            |           |            |           |            |
| January      | 1,948,200 | 48         | 93,271,300 | 110        | 3,339,300 | 83         | 646,300   | 54         |
| February     | 1,958,100 | 48         | 90,573,600 | 107        | 3,234,700 | 81         | 625,700   | 52         |
| March        | 1,967,100 | 48         | 87,295,200 | 103        | 3,201,100 | 80         | 653,700   | 55         |
| April        | 1,947,300 | 48         | 84,907,300 | 100        | 3,137,200 | 79         | 666,400   | 55         |
| May          | 2,224,000 | 55         | 84,671,700 | 99         | 3,132,700 | 79         | 840,200   | 70         |
| June         | 2,350,700 | 58         | 90,165,400 | 106        | 3,314,200 | 83         | 993,800   | 82         |
| July         | 2,954,100 | 72         | 95,665,700 | 112        | 3,619,800 | 91         | 1,513,900 | 125        |
| August       | 2,450,400 | 60         | 97,956,900 | 115        | 3,897,100 | 98         | 4,589,800 | 81         |
| September    | 2,413,100 | 59         | 92,497,900 | 108        | 3,722,200 | 94         | 4,562,000 | 81         |
| October      | 2,205,300 | 54         | 90,872,400 | 106        | 3,500,500 | 90         | 4,494,700 | 80         |
| November     | 2,318,400 | 56         | 89,813,400 | 105        | 3,503,300 | 89         | 4,461,200 | 79         |
| December     | 2,240,400 | 55         | 92,826,800 | 109        | 3,394,900 | 86         | 4,150,000 | 73         |
| For the Year | 2,250,400 | 55         | 90,895,700 | 107        | 3,422,100 | 86         | 609,500   | 50         |
|              |           |            |            |            | 4,664,900 | 101        | 851,000   | 70         |
|              |           |            |            |            |           |            | 4,162,700 | 74         |

TABLE No. 9 — Continued — (Meter Basis). Average Daily Consumption of Water in Cities and Towns, etc.

| City or Town . . . | MEDFORD   | MELROSE    | MILTON    | NAHANT     | QUINCY    | REVERE     |
|--------------------|-----------|------------|-----------|------------|-----------|------------|
| Population . . .   | 63,080    | 25,300     | 19,780    | 1,850      | 81,580    | 34,980     |
| MONTH              | Gallons   |            | Gallons   |            | Gallons   |            |
|                    | Per Day   | Per Capita | Per Day   | Per Capita | Per Day   | Per Capita |
|                    | Per Day   | Per Capita | Per Day   | Per Capita | Per Day   | Per Capita |
| January . . .      | 3,364,100 | 53         | 973,100   | 106,500    | 4,144,800 | 1,913,000  |
| February . . .     | 3,344,600 | 53         | 958,600   | 112,800    | 4,617,100 | 1,873,200  |
| March . . .        | 3,348,900 | 53         | 959,500   | 107,800    | 4,630,000 | 1,854,700  |
| April . . .        | 3,349,800 | 53         | 960,200   | 108,600    | 4,129,900 | 1,844,400  |
| May . . .          | 3,439,100 | 55         | 1,159,200 | 130,800    | 4,400,900 | 2,202,900  |
| June . . .         | 3,665,100 | 58         | 1,178,900 | 231,200    | 4,710,900 | 2,424,200  |
| July . . .         | 3,992,700 | 63         | 1,444,500 | 362,800    | 5,314,300 | 2,924,400  |
| August . . .       | 3,699,400 | 59         | 1,190,700 | 344,400    | 5,166,200 | 2,597,700  |
| September . . .    | 3,608,300 | 57         | 992,300   | 235,800    | 4,760,900 | 2,367,100  |
| October . . .      | 3,440,400 | 54         | 976,800   | 154,700    | 4,764,100 | 2,091,500  |
| November . . .     | 3,319,000 | 53         | 980,900   | 121,500    | 4,688,900 | 2,050,000  |
| December . . .     | 3,318,400 | 52         | 926,400   | 109,600    | 4,691,100 | 2,002,600  |
| For the Year . . . | 3,492,100 | 55         | 1,059,600 | 177,800    | 4,669,700 | 2,181,400  |
|                    |           | 60         | 54        | 96         | 57        | 62         |



TABLE No. 9 — Concluded — (Meter Basis). Average Daily Consumption of Water in Cities and Towns, etc.

| City or Town . . | SOMERVILLE | STONEHAM   | SWAMPSCOTT | WATERTOWN  | WINTHROP   | METROPOLITAN DISTRICT |
|------------------|------------|------------|------------|------------|------------|-----------------------|
| Population . .   | 97,790     | 11,580     | 10,600     | 36,710     | 17,140     | 1,475,730             |
|                  | Gallons    | Gallons    | Gallons    | Gallons    | Gallons    | Gallons               |
| MONTH            | Per Day    | Per Day    | Per Day    | Per Day    | Per Day    | Per Day               |
|                  | Per Capita | Per Capita | Per Capita | Per Capita | Per Capita | Per Capita            |
| January . .      | 9,108,100  | 681,400    | 697,200    | 2,184,300  | 1,285,800  | 134,847,300           |
| February . .     | 8,998,800  | 671,900    | 707,100    | 2,318,900  | 1,226,800  | 132,295,000           |
| March . .        | 8,890,100  | 652,000    | 686,700    | 2,247,700  | 1,187,400  | 128,747,500           |
| April . .        | 8,878,900  | 655,900    | 701,300    | 2,201,800  | 1,207,000  | 125,573,800           |
| May . .          | 8,896,000  | 694,100    | 734,300    | 2,323,000  | 1,252,900  | 127,404,100           |
| June . .         | 9,277,100  | 679,100    | 857,400    | 2,459,400  | 1,490,200  | 135,790,600           |
| July . .         | 10,106,000 | 802,500    | 1,181,500  | 2,664,500  | 1,820,100  | 147,989,100           |
| August . .       | 10,011,900 | 632,200    | 1,139,400  | 2,461,000  | 1,781,000  | 147,604,300           |
| September . .    | 9,231,800  | 616,100    | 847,700    | 2,357,400  | 1,474,300  | 139,193,400           |
| October . .      | 9,165,700  | 585,900    | 681,100    | 2,409,400  | 1,303,200  | 135,392,000           |
| November . .     | 9,235,000  | 589,300    | 625,300    | 2,360,600  | 1,193,900  | 133,437,100           |
| December . .     | 9,280,200  | 598,200    | 629,000    | 2,142,000  | 1,160,200  | 135,837,800           |
| For the Year . . | 9,259,800  | 654,900    | 791,700    | 2,344,400  | 1,366,600  | 135,387,900           |
|                  | 95         | 57         | 75         | 64         | 80         | 92                    |

TABLE No. 10. — *Chemical Examinations of Water from the Wachusett Reservoir, Clinton, in 1939*  
(Parts per 1,000,000)

| DATE OF<br>COLLECTION | APPEARANCE |          | ODOR                 |                      | RESIDUE ON<br>EVAPORATION |                     | AMMONIA |            | Hydrogen-ion<br>Concentration | Manganese | Chlorine | Hardness |
|-----------------------|------------|----------|----------------------|----------------------|---------------------------|---------------------|---------|------------|-------------------------------|-----------|----------|----------|
|                       | Turbidity  | Sediment | Cold                 | Hot                  | Total                     | Loss on<br>Ignition | Free    | Albuminoid |                               |           |          |          |
| Jan. 3                | 3          | —        | V. faintly vegetable | Faintly vegetable    | —                         | —                   | .014    | .092       | —                             | —         | 2.4      | —        |
| Jan. 17               | 1          | —        | V. faintly vegetable | Faintly vegetable    | 36                        | 15                  | .008    | .094       | —                             | —         | 2.4      | 13       |
| Jan. 31               | 2          | —        | V. faintly vegetable | Faintly vegetable    | —                         | —                   | .006    | .090       | —                             | .01       | 2.4      | —        |
| Feb. 21               | 2          | —        | V. faintly vegetable | V. faintly vegetable | 32                        | 14                  | .022    | .094       | —                             | .02       | 2.5      | 11       |
| Mar. 7                | 1          | —        | V. faintly vegetable | Distinctly vegetable | —                         | —                   | .026    | .098       | —                             | —         | 2.0      | —        |
| Mar. 28               | 1          | —        | V. faintly vegetable | Faintly vegetable    | 32                        | 10                  | .010    | .102       | —                             | —         | 2.4      | 13       |
| Apr. 4                | 2          | —        | V. faintly vegetable | Distinctly vegetable | —                         | —                   | .004    | .056       | —                             | —         | 2.2      | —        |
| Apr. 17               | 1          | —        | V. faintly vegetable | Distinctly vegetable | 36                        | 15                  | .014    | .058       | —                             | —         | 2.2      | 13       |
| May 29                | 2          | —        | V. faintly vegetable | Faintly vegetable    | 36                        | 18                  | .016    | .088       | —                             | —         | 2.4      | 13       |
| Aug. 1                | 2          | —        | V. faintly vegetable | V. faintly vegetable | 35                        | 15                  | .014    | .122       | —                             | —         | 2.5      | 13       |
| Oct. 3                | 2          | —        | V. faintly vegetable | Faintly vegetable    | 36                        | 12                  | .004    | .098       | —                             | —         | 2.4      | 17       |
| Dec. 5                | 2          | —        | Faintly vegetable    | Faintly vegetable    | 30                        | 11                  | .004    | .072       | —                             | —         | 2.6      | 18       |
| Average               | 1.75       | .....    | .....                | .....                | 34                        | 14                  | .012    | .089       | 6.7                           | .015      | 2.4      | 14       |

TABLE No. 11.—*Chemical Examinations of Water from the Sudbury Reservoir in 1939*  
(Parts per 1,000,000)

| DATE OF<br>COLLECTION | APPEARANCE |          | ODOR                               |                      | RESIDUE ON<br>EVAPORATION |                     | AMMONIA |            | Hydrogen-ion<br>Concentration | Manganese | Chlorine | Hardness |
|-----------------------|------------|----------|------------------------------------|----------------------|---------------------------|---------------------|---------|------------|-------------------------------|-----------|----------|----------|
|                       | Turbidity  | Sediment | Cold                               | Hot                  | Total                     | Loss on<br>Ignition | Free    | Albuminoid |                               |           |          |          |
|                       |            |          |                                    |                      |                           |                     |         |            |                               |           |          |          |
| Jan. 3 .              | 4          | —        | V. faintly vegetable               | Faintly vegetable    | —                         | —                   | .014    | .116       | —                             | —         | 3.2      | —        |
| Jan. 31 .             | 2          | —        | V. faintly vegetable               | Faintly vegetable    | 39                        | 15                  | .006    | .086       | —                             | —         | 2.6      | 16       |
| Mar. 7 .              | 2          | —        | V. faintly vegetable               | Faintly vegetable    | —                         | —                   | .028    | .122       | —                             | —         | 2.8      | —        |
| Apr. 4 .              | 2          | —        | V. faintly vegetable<br>and grassy | Distinctly vegetable | 37                        | 16                  | .004    | .120       | —                             | —         | 2.5      | 16       |
| May 31 .              | 2          | —        | V. faintly vegetable               | Faintly vegetable    | 39                        | 14                  | .022    | .118       | 6.8                           | —         | 3.2      | 17       |
| Aug. 1 .              | 2          | —        | V. faintly vegetable               | Faintly vegetable    | 40                        | 13                  | .002    | .112       | 6.8                           | —         | 2.8      | 20       |
| Oct. 3 .              | 3          | —        | V. faintly vegetable               | V. faintly vegetable | 37                        | 13                  | .030    | .176       | 6.7                           | —         | 3.0      | 14       |
| Dec. 5 .              | 3          | —        | V. faintly vegetable               | Faintly vegetable    | 34                        | 14                  | .016    | .106       | 6.7                           | —         | 3.2      | 13       |
| Average .             | 2.5        | .....    | .....                              | .....                | 38                        | 14                  | .015    | .120       | 6.75                          | —         | 2.9      | 16       |

TABLE No. 12.—*Chemical Examinations of Water from Spot Pond, Stoneham, in 1939*  
(Parts per 1,000,000)

| DATE OF COLLECTION | Turbidity | Sediment | Cold                           | Hot                         | Total | Loss on Ignition | Free | Albuminoid | Hydrogen-ion Concentration | Manganese | Chlorine | Hardness |
|--------------------|-----------|----------|--------------------------------|-----------------------------|-------|------------------|------|------------|----------------------------|-----------|----------|----------|
|                    |           |          |                                |                             |       |                  |      |            |                            |           |          |          |
|                    |           |          |                                |                             |       |                  |      |            |                            |           |          |          |
| Jan. 3 .           | 3         | —        | Faintly vegetable              | Faintly vegetable           | —     | —                | .032 | .110       | —                          | —         | 4.0      | —        |
| Jan. 30 .          | 2         | —        | V. faintly vegetable           | V. faintly vegetable        | 47    | 20               | .038 | .102       | —                          | —         | 4.0      | 21       |
| Mar. 6 .           | 2         | —        | V. faintly vegetable           | V. faintly vegetable        | —     | —                | .058 | .114       | —                          | —         | 4.2      | —        |
| Apr. 3 .           | 2         | —        | V. faintly vegetable           | Faintly vegetable           | 37    | 16               | .022 | .070       | —                          | —         | 4.0      | 16       |
| May 31 .           | 2         | —        | V. faintly vegetable           | Faintly vegetable           | 35    | 17               | .026 | .104       | 6.7                        | —         | 3.9      | 14       |
| Aug. 2 .           | 2         | —        | V. faintly vegetable           | V. faintly vegetable        | 34    | 12               | .020 | .098       | 6.6                        | —         | 4.0      | 21       |
| Oct. 1 .           | 2         | —        | V. faintly vegetable           | Faintly vegetable and fishy | 37    | 14               | .008 | .080       | 6.8                        | —         | 4.0      | 11       |
| Dec. 4 .           | 3         | —        | V. faintly vegetable and fishy | Faintly vegetable and fishy | 37    | 14               | .046 | .096       | 6.7                        | —         | 4.0      | 20       |
| Average .          | 2         | .....    | .....                          | .....                       | 38    | 16               | .031 | .097       | 6.7                        | —         | 4.0      | 17       |



TABLE No. 13 — *Chemical Examinations of Water from Lake Cochituate in 1939*  
(Parts per 1,000,000)

| DATE OF<br>COLLECTION | APPEARANCE |          | ODOR                 |                      | RESIDUE ON<br>EVAPORATION |                     | AMMONIA |            | Hydrogen-ion<br>Concentration | Manganese | Chlorine | Hardness |
|-----------------------|------------|----------|----------------------|----------------------|---------------------------|---------------------|---------|------------|-------------------------------|-----------|----------|----------|
|                       | Turbidity  | Sediment | Cold                 | Hot                  | Total                     | Loss on<br>Ignition | Free    | Albuminoid |                               |           |          |          |
|                       |            |          |                      |                      |                           |                     |         |            |                               |           |          |          |
| Jan. 4 . . .          | 3          | —        | V. faintly vegetable | V. faintly vegetable | 77                        | —                   | .022    | .184       | —                             | .06       | 6.8      | 27       |
| Feb. 1 . . .          | 3          | —        | V. faintly vegetable | V. faintly vegetable | —                         | 28                  | .016    | .164       | —                             | —         | 6.8      | 30       |
| Mar. 8 . . .          | 3          | —        | Faintly vegetable    | Distinctly vegetable | 76                        | 24                  | .032    | .164       | —                             | —         | 7.0      | —        |
| Apr. 5 . . .          | 3          | —        | V. faintly vegetable | Distinctly vegetable | 74                        | 23                  | .020    | .120       | —                             | —         | 6.8      | 30       |
| May 31 . . .          | 3          | —        | Faintly vegetable    | Distinctly vegetable | 74                        | 23                  | .030    | .152       | 7.0                           | —         | 6.6      | 30       |
| Aug. 2 . . .          | 2          | —        | V. faintly vegetable | Faintly vegetable    | 69                        | 21                  | .010    | .164       | 7.1                           | —         | 7.0      | 33       |
| Oct. 3 . . .          | 2          | —        | Faintly vegetable    | Faintly vegetable    | 68                        | 21                  | .018    | .114       | 7.0                           | —         | 7.2      | 33       |
| Dec. 6 . . .          | 3          | —        | V. faintly vegetable | Faintly vegetable    | 88                        | 22                  | .022    | .116       | 6.9                           | —         | 7.2      | 29       |
| Average . . .         | 3          | .....    | .....                | .....                | 75                        | 23                  | .021    | .147       | 7.0                           | .06       | 6.9      | 30       |

TABLE No. 14. — *Chemical Examinations of Water from a tap at the State House, Boston, in 1939*  
(Parts per 1,000,000)

| DATE OF COLLECTION | Turbidity | Sediment | Cold                 | Hot               | Total | Loss on Ignition | Free | Albuminoid | Hydrogen-ion Concentration | Manganese | Chlorine | Hardness |
|--------------------|-----------|----------|----------------------|-------------------|-------|------------------|------|------------|----------------------------|-----------|----------|----------|
|                    |           |          |                      |                   |       |                  |      |            |                            |           |          |          |
|                    |           |          |                      |                   |       |                  |      |            |                            |           |          |          |
| Jan. 16 . . .      | 2         | —        | V. faintly vegetable | Faintly vegetable | 48    | —                | .196 | .130       | 6.6                        | —         | 4.4      | —        |
| Feb. 18 . . .      | 2         | —        | V. faintly vegetable | Faintly vegetable | 38    | 16               | .160 | .092       | —                          | .04       | 4.0      | 14       |
| Nov. 16 . . .      | 3         | —        | V. faintly vegetable | Faintly vegetable | 37    | 12               | .112 | .112       | 6.7                        | —         | 4.0      | 18       |
| Dec. 19 . . .      | 2         | —        | V. faintly vegetable | Faintly vegetable | 37    | 14               | .126 | .092       | 6.7                        | —         | 4.0      | 18       |
| Average . . .      | 2         | .....    | .....                | .....             | 41    | 14               | .149 | .107       | 6.7                        | .04       | 4.1      | 17       |

TABLE No. 15.—*Chemical Examinations of Water from a Faucet in Boston,*  
1898-1939  
(Parts per 1,000,000)

| YEAR           | COLOR                | RESIDUE ON<br>EVAPORATION |                     | AMMONIA |            |           |           | Chlorine | Oxygen<br>Consumed | Hardness |
|----------------|----------------------|---------------------------|---------------------|---------|------------|-----------|-----------|----------|--------------------|----------|
|                | Platinum<br>Standard | Total                     | Loss on<br>Ignition | Free    | ALBUMINOID |           |           |          |                    |          |
|                |                      |                           |                     |         | Total      | Dissolved | Suspended |          |                    |          |
| 1898 . . . . . | 40                   | 41.9                      | 16.0                | .008    | .152       | .136      | .016      | 2.9      | 4.4                | 14       |
| 1899 . . . . . | 28                   | 37.0                      | 13.0                | .006    | .136       | .122      | .014      | 2.4      | 3.5                | 11       |
| 1901 . . . . . | 29                   | 38.0                      | 12.0                | .012    | .157       | .139      | .018      | 2.5      | 3.8                | 13       |
| 1902 . . . . . | 29                   | 44.3                      | 16.4                | .013    | .158       | .142      | .016      | 3.0      | 4.2                | 17       |
| 1903 . . . . . | 30                   | 39.3                      | 15.6                | .016    | .139       | .119      | .020      | 2.9      | 4.0                | 17       |
| 1904 . . . . . | 29                   | 39.8                      | 15.0                | .013    | .125       | .110      | .015      | 3.0      | 3.9                | 15       |
| 1905 . . . . . | 23                   | 39.3                      | 15.9                | .023    | .139       | .121      | .018      | 3.4      | 3.7                | 15       |
| 1906 . . . . . | 24                   | 38.6                      | 15.9                | .020    | .145       | .124      | .021      | 3.5      | 3.5                | 14       |
| 1907 . . . . . | 24                   | 38.6                      | 13.9                | .018    | .159       | .134      | .025      | 3.4      | 3.6                | 13       |
| 1908 . . . . . | 22                   | 38.3                      | 14.0                | .013    | .129       | .109      | .020      | 3.3      | 3.2                | 13       |
| 1909 . . . . . | 19                   | 35.0                      | 13.5                | .011    | .115       | .092      | .024      | 3.3      | 2.6                | 12       |
| 1910 . . . . . | 18                   | 34.6                      | 14.3                | .011    | .128       | .103      | .025      | 2.8      | 2.5                | 13       |
| 1911 . . . . . | 14                   | 30.5                      | 12.4                | .013    | .118       | .102      | .016      | 2.8      | 2.2                | 11       |
| 1912 . . . . . | 25                   | 41.8                      | 16.6                | .015    | .156       | .128      | .029      | 3.8      | 3.3                | 14       |
| 1913 . . . . . | 17                   | 38.6                      | 12.3                | .018    | .154       | .119      | .034      | 3.6      | 2.9                | 17       |
| 1914 . . . . . | 13                   | 39.6                      | 11.5                | .014    | .150       | .120      | .026      | 3.5      | 2.6                | 15       |
| 1915 . . . . . | 14                   | 41.2                      | 11.9                | .014    | .138       | .116      | .022      | 3.9      | 2.5                | 14       |
| 1916 . . . . . | 16                   | 37.3                      | 10.4                | .015    | .157       | .134      | .023      | 3.8      | 2.5                | 14       |
| 1917 . . . . . | 18                   | 45.3                      | 18.5                | .013    | .133       | .107      | .026      | 3.6      | —                  | 14       |
| 1918 . . . . . | 15                   | 44.5                      | 16.8                | .015    | .142       | .124      | .018      | 3.3      | —                  | 13       |
| 1919 . . . . . | 18                   | 38.9                      | 14.5                | .019    | .154       | .128      | .026      | 2.9      | —                  | 14       |
| 1920 . . . . . | 20                   | 42.8                      | 14.1                | .010    | .130       | .108      | .022      | 3.6      | —                  | 15       |
| 1921 . . . . . | 17                   | 42.3                      | 13.5                | .012    | .112       | .097      | .014      | 3.3      | —                  | 15       |
| 1922 . . . . . | 13                   | 38.0                      | 13.9                | .006    | .104       | .089      | .015      | 2.5      | —                  | 14       |
| 1923 . . . . . | 16                   | 39.8                      | 15.5                | .011    | .097       | .080      | .017      | 3.0      | —                  | 18       |
| 1924 . . . . . | 15                   | 39.0                      | 14.5                | .011    | .100       | .090      | .010      | 2.6      | —                  | 15       |
| 1925 . . . . . | 12                   | 41.0                      | 16.0                | .011    | .109       | .084      | .025      | 2.8      | —                  | 15       |
| 1926 . . . . . | 9                    | 39.8                      | 16.2                | .013    | .109       | .093      | .016      | 2.9      | —                  | 15       |
| 1927 . . . . . | 10                   | 41.8                      | 16.8                | .015    | .115       | .092      | .023      | 3.2      | —                  | 15       |
| 1928 . . . . . | 22                   | 44.7                      | 16.2                | .013    | .111       | .101      | .018      | 3.4      | —                  | 19       |
| 1929 . . . . . | 27                   | 44.3                      | 17.2                | .011    | .124       | .106      | .018      | 3.7      | —                  | 15       |
| 1929 . . . . . | 21                   | 42.6                      | 17.1                | .007    | .106       | .074      | .032      | 3.0      | —                  | 13       |
| 1930 . . . . . | 16                   | 40.7                      | 13.4                | .012    | .071       | .055      | .016      | 3.4      | —                  | 13       |
| 1931 . . . . . | 24                   | 48.8                      | 16.4                | .013    | .097       | .072      | .025      | 4.5      | —                  | 20       |
| 1932 . . . . . | 19                   | 43.5                      | 16.0                | .007    | .102       | .075      | .027      | 3.9      | —                  | 16       |
| 1933 . . . . . | 19                   | 41.5                      | 14.1                | .010    | .095       | .069      | .026      | 4.0      | —                  | 19       |
| 1934 . . . . . | 19                   | 40.3                      | 13.8                | .013    | .083       | .062      | .021      | 3.8      | —                  | 19       |

| YEAR           | COLOR                | RESIDUE ON<br>EVAPORATION |                     | Free Ammonia | Total<br>Albumen<br>Ammonia | Hydrogen-ion<br>Concentration | Manganese | Chlorine | Alkalinity | Hardness |
|----------------|----------------------|---------------------------|---------------------|--------------|-----------------------------|-------------------------------|-----------|----------|------------|----------|
|                |                      |                           |                     |              |                             |                               |           |          |            |          |
|                | Platinum<br>Standard | Total                     | Loss on<br>Ignition |              |                             |                               |           |          |            |          |
| 1935 . . . . . | 17                   | 42.9                      | 15.6                | .027         | .095                        | 6.7                           | .025      | 4.0      | —          | 17       |
| 1936 . . . . . | 15                   | 37.8                      | 12.8                | .009         | .099                        | 6.8                           | .020      | 3.9      | —          | 18       |
| 1937 . . . . . | 19                   | 41.0                      | 13.8                | .041         | .093                        | 6.6                           | .020      | 4.0      | —          | 18       |
| 1938 . . . . . | 25                   | 45.8                      | 17.0                | .078         | .090                        | —                             | .020      | 4.0      | 10.2       | 19       |
| 1939 . . . . . | 21                   | 41.0                      | 14.0                | .149         | .107                        | 6.7                           | .040      | 4.1      | 10.8       | 17       |

TABLE No. 16 — *Number of Bacteria per Cubic Centimeter in Water at Various Places on the Metropolitan Water Works, 1898-1939*

(Averages of Weekly Determination)

| YEAR | CHESTNUT HILL RESERVOIR           |                     |                           | SOUTHERN SERVICE TAPS           |                                 |
|------|-----------------------------------|---------------------|---------------------------|---------------------------------|---------------------------------|
|      | Sudbury Aqueduct Terminal Chamber | Cochituate Aqueduct | Effluent Gate House No. 2 | Low Service 182 Boylston Street | High Service 20 Somerset Street |
| 1898 | 207                               | 145                 | 111                       | 96                              | —                               |
| 1899 | 224                               | 104                 | 217                       | 117                             | 123                             |
| 1900 | 248                               | 113                 | 256                       | 188                             | 181                             |
| 1901 | 225                               | 149                 | 169                       | 162                             | 168                             |
| 1902 | 203                               | 168                 | 121                       | 164                             | 246                             |
| 1903 | 76                                | 120                 | 96                        | 126                             | 243                             |
| 1904 | 347                               | 172                 | 220                       | 176                             | 355                             |
| 1905 | 495                               | 396                 | 489                       | 231                             | 442                             |
| 1906 | 231                               | 145                 | 246                       | 154                             | 261                             |
| 1907 | 147                               | 246                 | 118                       | 130                             | 176                             |
| 1908 | 162                               | 138                 | 137                       | 136                             | 148                             |
| 1909 | 198                               | 229                 | 119                       | 150                             | 195                             |
| 1910 | 216                               | —                   | 180                       | 178                             | 213                             |
| 1911 | 205                               | 204                 | 151                       | 175                             | 197                             |
| 1912 | 429                               | 450                 | 227                       | 249                             | 259                             |
| 1913 | 123                               | 243                 | 157                       | 119                             | 140                             |
| 1914 | 288                               | —                   | 252                       | 174                             | 220                             |
| 1915 | 163                               | —                   | 128                       | 117                             | 134                             |
| 1916 | 128                               | —                   | 85                        | 102                             | 105                             |
| 1917 | 178                               | 112                 | 119                       | 119                             | 141                             |
| 1918 | 1,163                             | 168                 | 705                       | 317                             | 544                             |
| 1919 | 92                                | 85                  | 100                       | 70                              | 84                              |
| 1920 | 148                               | 86                  | 108                       | 113                             | 112                             |
| 1921 | 103                               | —                   | 83                        | 92                              | 92                              |
| 1922 | 163                               | —                   | 153                       | 160                             | 172                             |
| 1923 | 229                               | —                   | 178                       | 217                             | 230                             |
| 1924 | 137                               | —                   | 96                        | 150                             | 160                             |
| 1925 | 144                               | 251                 | 120                       | 155                             | 174                             |
| 1926 | 167                               | —                   | 118                       | 130                             | 137                             |
| 1927 | 119                               | 185                 | 70                        | 81                              | 101                             |
| 1928 | 144                               | 32                  | 86                        | 106                             | 106                             |
| 1929 | 128                               | —                   | 84                        | 130                             | 144                             |
| 1930 | 107                               | —                   | 66                        | 105                             | 123                             |
| 1931 | 82*                               | 4*                  | 43                        | 80                              | 101                             |
| 1932 | 121*                              | —                   | 63                        | 123                             | 147                             |
| 1933 | 20*                               | —                   | 15                        | 40                              | 45                              |
| 1934 | 10*                               | —                   | 26                        | 42                              | 31                              |
| 1935 | 4*                                | —                   | 32                        | 35                              | 18                              |
| 1936 | 21*                               | —                   | 56                        | 51                              | 59                              |
| 1937 | 12*                               | —                   | 50                        | 90                              | 21                              |
| 1938 | 3*                                | —                   | 49                        | 13                              | 14                              |
| 1939 | 4*                                | —                   | 111                       | 6                               | 22                              |

\*After the water was sterilized with chlorine.



TABLE No. 17. — Colors of Water at Various Places on the Metropolitan Water Works in 1939  
(Platinum Standard)

| MONTH           | WACHUSETT <sup>1</sup> RESERVOIR |                      |                  |                    |                 |                         | WACHU-<br>SETT<br>AQUE-<br>DUCT<br>INFLUENT | SUDBURY <sup>1</sup> RESERVOIR |                        |                              | FRAM-<br>INGHAM<br>RESER-<br>VOIR<br>No. 3 | LAKE <sup>1</sup> COCHITUATE    |                              |                                   | CHESTNUT HILL RESERVOIR |   |   | SPOT <sup>1</sup> POND | FELLS RESER-<br>VOIR | SOUTHERN SERVICE                              |  | NORTHERN SERVICE |    |
|-----------------|----------------------------------|----------------------|------------------|--------------------|-----------------|-------------------------|---|--------------------------------|------------------------|------------------------------|--|---------------------------------|------------------------------|-----------------------------------|-------------------------|---|---|------------------------|----------------------|---|--|------------------|----|
|                 | Stillwater River<br>Influent     | Worcester St. Bridge | Surface near Dam | Mid-depth near Dam | Bottom near Dam | Surface near Gate House |   | Mid-depth near Gate House      | Bottom near Gate House | Sudbury Aqueduct<br>Influent |  | Cochituate Aqueduct<br>Influent | Effluent Gate House<br>No. 2 | Mid-depth near<br>East Gate House | Effluent Gate House     | Tap at 182 Boylston St.,<br>Boston, Low Service | Tap at 20 Somerset St.,<br>Boston, High Service |                        |                      | Tap at Glenwood Yard,<br>Medford, Low Service | Tap at Glenwood Yard,<br>Medford, High Service |                  |    |
|                 |                                  |                      |                  |                    |                 |                         |   |                                |                        |                              |  |                                 |                              |                                   |                         |   |   |                        |                      |   |  |                  |    |
| January . . .   | 28                               | 26                   | 27               | 22                 | 22              | 25                      | 30  | 33                             | 32                     | 42                           | 43   | 40                              | 33                           | 38                                | 32                      | —   | 25  | 25                     | 33                   | 34  | 35   | 26               | 26 |
| February . . .  | 30                               | 26                   | 27               | 22                 | 22              | 27                      | 25  | 28                             | 28                     | 47                           | 43   | 42                              | 28                           | 28                                | 27                      | 20  | 24  | 24                     | 26                   | 28  | 27   | 26               | 26 |
| March . . .     | 27                               | 27                   | 28               | 23                 | —               | 26                      | 27  | 27                             | 26                     | 46                           | —  | —                               | 25                           | 24                                | —                       | —   | 22  | 22                     | 26                   | 26  | 26   | 27               | 27 |
| April . . .     | 29                               | 27                   | 27               | 22                 | 21              | 25                      | 26  | 27                             | 26                     | 42                           | —  | —                               | 24                           | 24                                | 25                      | 21  | 22  | 22                     | 27                   | 27  | 27   | 27               | 27 |
| May . . .       | 46                               | 40                   | 27               | 21                 | —               | 23                      | 24  | 25                             | 25                     | 30                           | 33   | 30                              | 23                           | 24                                | 21                      | 16  | 19  | 24                     | 24                   | 24  | 24   | 24               | 24 |
| June . . .      | 56                               | 49                   | 35               | 18                 | 19              | 20                      | 20  | 21                             | 22                     | 22                           | 49   | 28                              | 28                           | 23                                | 19                      | 21  | 18  | 21                     | 21                   | 21  | 20   | 20               | 20 |
| July . . .      | 33                               | 32                   | 23               | 14                 | 14              | 17                      | 17  | 16                             | 20                     | 18                           | 25   | 25                              | 81                           | 20                                | 16                      | —   | 14  | 14                     | 17                   | 17  | 15   | 15               | 15 |
| August . . .    | 30                               | 27                   | 14               | 12                 | 14              | 15                      | 14  | 16                             | 16                     | 14                           | 124  | 24                              | 19                           | 19                                | 13                      | 9   | 12  | 12                     | 13                   | 16  | 13   | 13               | 13 |
| September . . . | 24                               | 20                   | 13               | 12                 | 13              | 14                      | 14  | 15                             | 15                     | 13                           | 24   | 136                             | 14                           | 14                                | 12                      | —   | 11  | 11                     | 15                   | 16  | 12   | 12               | 12 |
| October . . .   | 32                               | 21                   | 12               | 10                 | 11              | 12                      | 13  | 13                             | 14                     | 14                           | 158  | 22                              | 12                           | 12                                | 12                      | —   | 11  | 11                     | 14                   | 15  | 13   | 13               | 13 |
| November . . .  | 35                               | 21                   | 21               | 11                 | 12              | 11                      | 14  | 13                             | 15                     | 22                           | 30   | 22                              | 14                           | 14                                | 13                      | —   | 13  | 13                     | 15                   | 15  | 14   | 14               | 14 |
| December . . .  | 38                               | 22                   | 29               | 12                 | 12              | 12                      | 14  | 15                             | 14                     | 21                           | 22   | 22                              | 16                           | 16                                | 14                      | —   | 13  | 13                     | 17                   | 16  | 16   | 16               | 16 |
| Mean . . .      | 34                               | 29                   | 24               | 17                 | 16              | 16                      | 19  | 19                             | 20                     | 28                           | 42   | 28                              | 21                           | 21                                | 19                      | 17  | 17  | 21                     | 21                   | 21  | 20   | 20               | 19 |

<sup>1</sup> Mid-depth and bottom colors are averages of bi-weekly determinations; all others are averages of weekly determinations.

TABLE No. 18. — *Temperatures of Water at Various Places on the Metropolitan Water Works in 1939*

The temperatures are taken at the same places and times as the samples for microscopical examination, the depth at place of observation from high-water mark.  
(Degrees Fahrenheit)

| MONTH       | WACHUSETT <sup>1</sup><br>RESERVOIR<br>DEPTH AT<br>PLACE OF<br>OBSERVATION<br>NEAR DAM<br>107 FEET |           |        | WACHU-<br>SETT<br>AQUE-<br>DUCT<br>IN-<br>FLUENT |           |        | SUDBURY <sup>1</sup><br>RESERVOIR<br>DEPTH AT<br>PLACE OF<br>OBSERVATION<br>NEAR DAM<br>54.5 FEET |           |        | FRAMINGHAM <sup>1</sup><br>RESERVOIR No. 3<br>DEPTH AT<br>PLACE OF<br>OBSERVATION<br>NEAR DAM<br>20.5 FEET |           |        | LAKE <sup>1</sup><br>COCHITUATE<br>DEPTH AT<br>PLACE OF<br>OBSERVATION<br>NEAR GATE HOUSE<br>62.0 FEET |           |        | CHEST-<br>NUT<br>HILL<br>RESER-<br>VOIR |           |        | Spot Pond <sup>1</sup><br>DEPTH AT<br>PLACE OF<br>OBSERVATION<br>NEAR<br>EAST GATE HOUSE<br>28.0 FEET |           |        | SOUTHERN<br>SERVICE                             |   | NORTHERN<br>SERVICE                           |  |
|-------------|--|-----------|--------|--|-----------|--------|---|-----------|--------|--|-----------|--------|--|-----------|--------|---|-----------|--------|---|-----------|--------|---|---|---|--|
|             | Surface  | Mid-depth | Bottom | Surface  | Mid-depth | Bottom | Surface   | Mid-depth | Bottom | Surface  | Mid-depth | Bottom | Surface  | Mid-depth | Bottom | Surface                                 | Mid-depth | Bottom | Surface   | Mid-depth | Bottom | Tap at 182 Boylston St.,<br>Boston, Low Service | Tap at 20 Somerset St.,<br>Boston, High Service | Tap at Glenwood Yard,<br>Medford, Low Service | Tap at Glenwood Yard,<br>Medford, High Service |
| January .   | 33.3   | —         | —      | 34.5   | —         | 37.0   | 36.6  | 37.0      | 37.5   | 36.2   | 35.5      | 36.3   | 35.5   | —         | 36.3   | 35.5                                    | —         | 36.3   | 35.5  | 37.3      | 37.5   | 39.1  | 38.8  | 41.4  | 41.4   |
| February .  | 33.6   | 35.0      | 36.0   | 37.4   | 37.0      | 37.5   | 37.7  | 37.3      | 38.1   | 37.9   | 37.9      | 37.9   | 37.9   | 39.3      | 37.5   | 39.3                                    | 39.8      | 39.8   | 40.5  | 40.5      | 40.8   | 39.8  | 38.9  | 41.1  | 41.1   |
| March .     | 39.3   | —         | —      | 36.0   | —         | 38.0   | 37.1  | —         | —      | 37.7   | 37.7      | —      | 37.7   | 39.9      | —      | 37.5                                    | 40.8      | 40.7   | 40.4  | 40.4      | 40.8   | 40.7  | 40.4  | 41.3  | 41.3   |
| April .     | 39.2   | 37.8      | 41.6   | 39.3   | 42.8      | 41.5   | 43.6  | —         | —      | 43.2   | 42.1      | —      | 43.2   | 41.9      | 42.0   | 41.9                                    | 45.0      | 44.6   | 43.4  | 43.4      | 45.0   | 44.6  | 43.4  | 44.9  | 44.9   |
| May .       | 50.0   | 46.0      | —      | 49.4   | 55.3      | 49.8   | 58.3  | —         | —      | 57.7   | 57.7      | 55.4   | 57.2   | 55.2      | 53.5   | 55.2                                    | 57.0      | 56.8   | 53.1  | 53.1      | 57.0   | 56.8  | 53.1  | 50.0  | 50.0   |
| June .      | 69.4   | 61.1      | 54.9   | 55.0   | 62.5      | 58.0   | 70.4  | 70.0      | 65.5   | 69.2   | 69.2      | 48.0   | 69.2   | 68.8      | 63.4   | 68.8                                    | 68.0      | 63.4   | 68.0  | 63.4      | 68.0   | 68.5  | 68.5  | 64.0  | 58.4   |
| July .      | 73.8   | 66.8      | 54.9   | 59.3   | 73.5      | 61.5   | 75.0  | 73.5      | 74.5   | 74.5   | 76.0      | 48.3   | 74.5   | 74.0      | 67.5   | 74.0                                    | 74.4      | 67.5   | 74.0  | —         | 67.5   | 74.4  | 74.3  | 70.5  | 65.8   |
| August .    | 77.1   | 70.8      | 59.4   | 61.1   | 71.8      | 70.5   | 77.2  | 73.4      | —      | 77.9   | 66.9      | 52.3   | 74.2   | 75.5      | 71.8   | 76.7                                    | 75.7      | 70.4   | 75.1  | 75.1      | 70.8   | 70.4  | 69.8  | 67.1  | 70.9   |
| September . | 67.8   | 68.5      | 56.0   | 62.1   | 67.5      | 65.0   | 68.0  | 65.0      | 68.0   | 68.0   | 66.9      | 48.7   | 68.8   | 68.8      | 68.5   | 68.8                                    | 70.8      | 70.4   | 72.8  | 72.8      | 61.0   | 61.2  | 62.7  | 60.4  | 60.4   |
| October .   | 57.5   | 54.8      | 53.6   | 53.5   | 58.5      | 58.0   | 61.7  | 52.3      | 60.0   | 58.4   | 52.5      | 47.4   | 58.9   | 58.2      | 58.2   | 58.2                                    | 61.0      | 58.2   | 62.7  | 62.7      | 48.7   | 47.0  | 51.6  | 50.5  | 50.5   |
| November .  | 45.5   | 45.2      | 47.6   | 41.5   | 45.8      | 38.5   | 40.3  | 48.0      | —      | 44.8   | 44.5      | 44.0   | 45.6   | 42.6      | 43.0   | 42.6                                    | 48.7      | 47.0   | 45.0  | 45.0      | 43.0   | 47.0  | 45.0  | 43.9  | 43.9   |
| December    | 37.2   | 39.0      | 41.3   | 39.5   | 36.7      | 37.8   | 34.8  | —         | —      | 38.7   | 40.5      | 40.5   | 37.9   | 35.7      | 36.4   | 35.7                                    | 43.0      | 40.7   | 45.0  | 45.0      | 43.0   | 40.7  | 45.0  | 43.9  | 43.9   |
| Mean .      | 52.0   | 52.5      | 49.5   | 47.4   | 53.0      | 49.4   | 53.4  | 62.9      | 65.2   | 53.6   | 47.2      | 46.0   | 53.4   | 52.8      | 52.6   | 52.8                                    | 55.3      | 54.8   | 54.6  | 54.6      | 55.3   | 54.8  | 54.6  | 53.0  | 53.0   |

<sup>1</sup> Mid-depth and bottom temperatures are averages of bi-weekly determinations; all others are averages of weekly determinations.

TABLE No. 19.—Length of Metropolitan Water Works Main Lines and Connections and Number of Valves set in Same,  
December 31, 1939  
(Pipes are of cast-iron unless otherwise noted)

| Diameter of pipes in inches                                    |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
|--|---------------------|---------------------|----------------------|---------------------|-------|--------------------|---------------------|---------------------|----------------------|----------------------|---------------------|----|----------------------|-----|-------|-------|----|-----------------------|--|
| 60   | 56                  | 54                  | 48                   | 42                  | 40    | 38                 | 36                  | 30                  | 24                   | 20                   | 16                  | 14 | 12                   | 10  | 8     | 6     | 4  | Total                 |  |
| Total length owned and operated Dec. 31, 1938 (feet) . . . . . |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| 130,179  | 17,634              | 13,486              | 244,616              | 12,218              | 6,887 | 7,274              | 66,050              | 78,375              | 101,620              | 153,386              | 80,175              | 26 | 30,488               | 724 | 1,964 | 1,210 | 58 | 946,370               |  |
| Gate Valves in same . . . . .                                  |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| 22   | 2                   | 5                   | 66                   | 3                   | 3     | —                  | 81                  | 50                  | 72                   | 107                  | 156                 | 1  | 171                  | 22  | 33    | 28    | 2  | 824                   |  |
| Air Valves in same . . . . .                                   |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| 190  | 9                   | 12                  | 177                  | 12                  | 5     | 6                  | 49                  | 46                  | 61                   | 101                  | 43                  | —  | 14                   | 1   | —     | —     | —  | 726                   |  |
| Length laid or relaid during 1939 (feet) . . . . .             |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| 12   | —                   | —                   | —                    | —                   | —     | —                  | 9,371               | 122                 | 38                   | 133                  | 39                  | —  | 73                   | —   | —     | —     | —  | 9,788                 |  |
| Gate Valves in same . . . . .                                  |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| —  | —                   | —                   | —                    | —                   | —     | —                  | 1                   | 3                   | —                    | 2                    | —                   | —  | 3                    | —   | —     | —     | —  | 9                     |  |
| Air Valves in same . . . . .                                   |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| —  | —                   | —                   | —                    | —                   | —     | —                  | 22                  | —                   | —                    | 1                    | 1                   | —  | —                    | —   | —     | —     | —  | 24                    |  |
| Length abandoned during 1939 (feet) . . . . .                  |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| 12   | —                   | —                   | —                    | —                   | —     | —                  | 18                  | —                   | 37                   | 33                   | 37                  | —  | —                    | —   | —     | —     | —  | 137                   |  |
| Gate Valves in same . . . . .                                  |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| —  | —                   | —                   | —                    | —                   | —     | —                  | —                   | —                   | —                    | —                    | —                   | —  | —                    | —   | —     | —     | —  | —                     |  |
| Air Valves in same . . . . .                                   |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| —  | —                   | —                   | —                    | —                   | —     | —                  | —                   | —                   | —                    | 1                    | 1                   | —  | —                    | —   | —     | —     | —  | 2                     |  |
| Length owned and operated Dec. 31, 1939 (feet) . . . . .       |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| 130,179 <sup>1</sup>   | 17,634 <sup>2</sup> | 13,486 <sup>2</sup> | 244,616 <sup>3</sup> | 12,218 <sup>4</sup> | 6,887 | 7,274 <sup>2</sup> | 75,403 <sup>5</sup> | 78,497 <sup>6</sup> | 101,621 <sup>7</sup> | 153,486 <sup>8</sup> | 80,177 <sup>9</sup> | 26 | 30,561 <sup>10</sup> | 724 | 1,964 | 1,210 | 58 | 956,021 <sup>11</sup> |  |
| Gate Valves in same . . . . .                                  |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| 22   | 2                   | 5                   | 66                   | 3                   | 3     | —                  | 82                  | 53                  | 72                   | 109                  | 156                 | 1  | 174                  | 22  | 33    | 28    | 2  | 833                   |  |
| Air Valves in same . . . . .                                   |                     |                     |                      |                     |       |                    |                     |                     |                      |                      |                     |    |                      |     |       |       |    |                       |  |
| 190  | 9                   | 12                  | 177                  | 12                  | 5     | 6                  | 71                  | 46                  | 61                   | 101                  | 43                  | —  | 14                   | 1   | —     | —     | —  | 748                   |  |

<sup>1</sup> Includes 2,035 feet of 76-inch concrete-lined pressure tunnel; 363 feet of 76-inch mortar-lined and concrete-covered steel pipe; 21 feet of 76-inch cast-iron pipe; 85 feet of 60 inch concrete-covered steel pipe, and 82,624 feet of 60-inch steel pipe.

<sup>2</sup> Steel pipe.

<sup>3</sup> Includes 28,980 feet of steel pipe.

<sup>4</sup> Includes 2,338 feet of steel pipe.

<sup>5</sup> Includes 11,491 feet of steel pipe.

<sup>6</sup> Includes 15,512 feet of mortar-lined and covered wrought-iron pipe; and 26,661 feet of steel pipe.

<sup>7</sup> Includes 55 feet of steel pipe.

<sup>8</sup> Includes 33,317 feet of cement-lined cast-iron pipe and 1,151 feet of steel pipe.

<sup>9</sup> Includes 1,856 feet of cement-lined cast-iron pipe and 3 feet of steel pipe.

<sup>10</sup> Includes 627 feet of cement-lined cast-iron pipe.

<sup>11</sup> 181.06 miles.



TABLE No. 20.—Length of Metropolitan Water Works Hydrant, Blow-off and Drain Pipes, December 31, 1939  
(All pipes are of cast iron)

| DIAMETER OF PIPES IN INCHES                        |     |     |       |       |     |       |       |       |                     |
|--|-----|-----|-------|-------|-----|-------|-------|-------|---------------------|
|  | 24  | 20  | 16    | 12    | 10  | 8     | 6     | 4     | Total               |
| Total length in use Dec. 31, 1938 (feet).          | 352 | 292 | 4,270 | 8,605 | 233 | 1,315 | 4,844 | 1,946 | 21,857              |
| Valves in same . . . . .                           | —   | —   | 59    | 145   | 2   | 20    | 119   | 56    | 401                 |
| Length laid or relaid in 1939 (feet) . . . . .     | —   | —   | —     | 166   | —   | —     | 18    | —     | 184                 |
| Valves in same . . . . .                           | —   | —   | —     | 5     | —   | —     | 1     | —     | 6                   |
| Length abandoned in 1939 (feet) . . . . .          | —   | —   | —     | 445   | —   | —     | —     | —     | 445                 |
| Valves in same . . . . .                           | —   | —   | —     | —     | —   | —     | —     | —     | —                   |
| Total length in use Dec. 31, 1939 (feet) . . . . . | 352 | 292 | 4,270 | 8,326 | 233 | 1,315 | 4,862 | 1,946 | 21,596 <sup>1</sup> |
| Valves in same . . . . .                           | —   | —   | 59    | 150   | 2   | 20    | 120   | 56    | 407                 |

14.09 miles.

TABLE No. 21.—Length of Metropolitan Water Works Main Lines and Connections and Water Pipes, Four Inches in Diameter and Larger, in the Several Cities and Towns in the Metropolitan Water District, December 31, 1939

| By Whom Owned     | Diameter of Pipes in Inches |        |        |         |        |        |       |         |         |         |         |      |         |        |           |           | Totals    |           |         |            |          |
|-------------------|-----------------------------|--------|--------|---------|--------|--------|-------|---------|---------|---------|---------|------|---------|--------|-----------|-----------|-----------|-----------|---------|------------|----------|
|                   | 60                          | 56     | 54     | 48      | 42     | 40     | 38    | 36      | 30      | 24      | 20      | 18   | 16      | 14     | 12        | 10        | 8         | 6         | 4       | Feet       | Miles    |
| Met. Water Wks.   | 130,179                     | 17,634 | 13,486 | 244,616 | 12,218 | 6,887  | 7,274 | 75,403  | 78,497  | 101,621 | 153,486 | —    | 80,177  | 26     | 30,561    | 724       | 1,964     | 1,210     | 58      | 956,021    | 181.06   |
| Arlington . . .   | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | 2,388   | —      | 50,039    | 42,862    | 138,542   | 255,402   | 380     | 489,613    | 92.73    |
| Belmont . . .     | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | —       | —      | 16,836    | 53,248    | 96,225    | 216,989   | 269     | 383,567    | 72.65    |
| Boston . . .      | —                           | —      | —      | 47,142  | 17,089 | 9,599  | —     | 39,173  | 85,303  | 89,455  | 108,000 | —    | 365,455 | 285    | 1,827,903 | 451,125   | 1,175,847 | 988,784   | 64,121  | 5,269,281  | 997.97   |
| Brookline . . .   | —                           | —      | —      | —       | —      | —      | —     | —       | —       | 10,007  | 27,292  | —    | 26,406  | 12,880 | 67,042    | 94,168    | 128,756   | 278,432   | 250     | 645,233    | 122.20   |
| Chelsea . . .     | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | 4,660   | —    | 4,685   | —      | 6,012     | 45,787    | 38,598    | 160,233   | —       | 259,975    | 49.24    |
| Everett . . .     | —                           | —      | —      | —       | —      | —      | —     | —       | —       | 2,484   | 2,900   | —    | 24,382  | 9,225  | 10,159    | 48,596    | 41,521    | 166,891   | 16,965  | 323,130    | 61.20    |
| Lexington . . .   | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | 4,382   | —      | 48,941    | 18,130    | 72,527    | 200,480   | 21,278  | 365,738    | 69.27    |
| Malden . . .      | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | 12,759  | 11,142 | 101,565   | 38,493    | 128,166   | 238,594   | 41,056  | 571,775    | 108.29   |
| Medford . . .     | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | 673     | —    | 6,775   | 9,598  | 49,611    | 49,960    | 153,447   | 313,251   | 779     | 584,094    | 110.62   |
| Melrose . . .     | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | 12,464  | 3,024  | 26,223    | 31,583    | 31,709    | 213,292   | 47,050  | 365,345    | 69.20    |
| Milton . . .      | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | 4,579   | 72     | 95,043    | 26,479    | 112,284   | 239,957   | 5,827   | 484,241    | 91.71    |
| Nahant . . .      | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | —       | 10,444 | 5,550     | 11,550    | 13,643    | 39,186    | 58,955  | 139,328    | 26.39    |
| Newton . . .      | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | 36,250  | —    | 15,023  | —      | 120,562   | 8,410     | 240,289   | 780,128   | 55,211  | 1,255,873  | 237.85   |
| Quincy . . .      | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | 15,542  | —    | 35,648  | —      | 85,097    | 103,183   | 266,670   | 465,729   | 62,554  | 1,034,423  | 195.91   |
| Revere . . .      | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | 10,454  | 8,237  | 40,181    | 36,010    | 103,699   | 145,622   | 12,830  | 357,033    | 67.62    |
| Somerville . . .  | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | 5,577   | 367  | 10,094  | 7,942  | 148,016   | 98,430    | 112,370   | 189,200   | 15,361  | 587,357    | 111.24   |
| Stoneham . . .    | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | —       | —      | 8,985     | 13,539    | 35,094    | 113,288   | 17,688  | 188,594    | 35.72    |
| Swampscott . . .  | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | 150     | 4,712  | 10,950    | 21,800    | 8,200     | 127,169   | 3,994   | 176,975    | 33.52    |
| Watertown . . .   | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | —       | —    | 2,991   | 6,718  | 16,245    | 50,125    | 96,120    | 180,340   | 3,782   | 356,321    | 67.49    |
| Winthrop . . .    | —                           | —      | —      | —       | —      | —      | —     | —       | —       | —       | 5,151   | —    | 4,327   | —      | 5,302     | 24,198    | 93,864    | 52,403    | 9,397   | 194,642    | 36.86    |
| Total feet . . .  | 130,179                     | 17,634 | 13,486 | 291,758 | 29,307 | 16,486 | 7,274 | 114,576 | 163,800 | 203,567 | 359,531 | 367  | 623,146 | 84,305 | 2,770,823 | 1,268,400 | 3,089,535 | 5,366,580 | 437,805 | 14,988,559 | —        |
| Total miles . . . | 24.65                       | 3.34   | 2.55   | 55.26   | 5.55   | 3.12   | 1.38  | 21.70   | 31.02   | 38.55   | 68.09   | 0.07 | 118.02  | 15.97  | 524.78    | 240.23    | 585.14    | 1,016.40  | 82.92   | —          | 2,838.74 |

TABLE No. 22.—*Number of Service Pipes, Meters, Per Cent of Services Metered, Fire Services and Fire Hydrants in the Several Cities and Towns in the Metropolitan Water District, December 31, 1939*

| CITY OR TOWN                | Services | Meters  | Per Cent<br>of Services<br>Metered | Services<br>Used for<br>Fire<br>Purposes<br>Only | Fire<br>Hydrants |
|-----------------------------|----------|---------|------------------------------------|--|------------------|
| Arlington . . . . .         | 8,002    | 8,001   | 99.99                              | 34   | 960              |
| Belmont . . . . .           | 5,307    | 5,307   | 100.00                             | 14   | 554              |
| Boston . . . . .            | 101,284  | 101,284 | 100.00                             | 3,105  | 12,205           |
| Chelsea . . . . .           | 5,736    | 5,736   | 100.00                             | 157  | 464              |
| Everett . . . . .           | 7,398    | 7,398   | 100.00                             | 55   | 663              |
| Lexington . . . . .         | 2,779    | 2,779   | 100.00                             | 17   | 557              |
| Malden . . . . .            | 9,807    | 9,796   | 99.89                              | 78   | 766              |
| Medford . . . . .           | 10,878   | 10,876  | 99.98                              | 38   | 1,131            |
| Melrose . . . . .           | 6,269    | 6,269   | 100.00                             | 26   | 487              |
| Milton . . . . .            | 4,851    | 4,851   | 100.00                             | 8  | 732              |
| Nahant . . . . .            | 938      | 938     | 100.00                             | 3  | 144              |
| Quincy . . . . .            | 16,452   | 16,452  | 100.00                             | 58   | 1,846            |
| Revere . . . . .            | 6,500    | 6,496   | 99.94                              | 14   | 543              |
| Somerville . . . . .        | 13,834   | 13,749  | 99.39                              | 134  | 1,432            |
| Stoneham . . . . .          | 2,523    | 2,522   | 99.96                              | 3  | 201              |
| Swampscott . . . . .        | 2,855    | 2,855   | 100.00                             | 8  | 300              |
| Watertown . . . . .         | 6,097    | 6,097   | 100.00                             | 43   | 748              |
| Winthrop . . . . .          | 3,940    | 3,940   | 100.00                             | 6  | 389              |
| District Supplied . . . . . | 215,450  | 215,346 | 99.95                              | 3,801  | 24,122           |
| Brookline . . . . .         | 8,450    | 8,450   | 100.00                             | 64   | 1,246            |
| Newton . . . . .            | 16,305   | 16,305  | 100.00                             | 102  | 1,818            |
| Total District . . . . .    | 240,205  | 240,101 | 99.96                              | 3,967  | 27,186           |



TABLE No. 23. — *Elevation of the Hydraulic Grade Line, in Feet, above Boston City Base for Each Month at Stations on Metropolitan Water Works during 1939*

|           | 1939<br>MONTH | LOW SERVICE  |         |   |         |   |         |   |         |                                      |         |   |         |  |         |   |         |
|-----------|---------------|--|---------|---|---------|---|---------|---|---------|--------------------------------------|---------|---|---------|--|---------|---|---------|
|           |               | WATERTOWN,<br>PLEASANT<br>STREET AT<br>WALTHAM<br>LINE |         | BELMONT,<br>WATER WORKS<br>SHOP, WAYER-<br>LEY STREET |         | BOSTON,<br>BOWDOIN<br>SQUARE<br>ENGINE<br>HOUSE |         | ALLSTON,<br>ENGINE<br>HOUSE,<br>HARVARD<br>STREET |         | MEDFORD,<br>NEAR MYSTIC<br>RESERVOIR |         | SOMERVILLE,<br>PUBLIC<br>LIBRARY,<br>HIGHLAND<br>AVENUE |         | MALDEN,<br>WATER WORKS<br>SHOP,<br>GREEN<br>STREET |         | CHELSEA,<br>FIRE<br>STATION,<br>PARK STREET |         |
|           |               | Maximum  | Minimum | Maximum   | Minimum | Maximum   | Minimum | Maximum   | Minimum | Maximum                              | Minimum | Maximum   | Minimum | Maximum  | Minimum | Maximum                                     | Minimum |
| January   | .             | 193  | 188     | 192   | 188     | 150   | 138     | 174   | 167     | 164                                  | 159     | 162   | 156     | 165  | 158     | 159   | 153     |
| February  | .             | 193  | 188     | 192   | 188     | 149   | 141     | 172   | 168     | 165                                  | 160     | 164   | 154     | 164  | 158     | 159   | 154     |
| March     | .             | 195  | 191     | 194   | 190     | 150   | 141     | 172   | 168     | 164                                  | 159     | 164   | 156     | 165  | 156     | 159   | 154     |
| April     | .             | 196  | 188     | 196   | 185     | 150   | 141     | 172   | 168     | 162                                  | 159     | 160   | 156     | 165  | 156     | 159   | 153     |
| May       | .             | 194  | 188     | 194   | 186     | 150   | 141     | 175   | 168     | 165                                  | 159     | 164   | 157     | 165  | 158     | 161   | 153     |
| June      | .             | 193  | 188     | 192   | 188     | 149   | 141     | 172   | 168     | 164                                  | 161     | 162   | 156     | 164  | 156     | 159   | 154     |
| July      | .             | 192  | 185     | 192   | 184     | 150   | 134     | 178   | 167     | 168                                  | 160     | 164   | 155     | 164  | 156     | 164   | 152     |
| August    | .             | 188  | 184     | 190   | 178     | 149   | 134     | 172   | 168     | 166                                  | 160     | 165   | 155     | 164  | 153     | 159   | 150     |
| September | .             | 193  | 184     | 191   | 181     | 150   | 141     | 175   | 168     | 166                                  | 160     | 167   | 157     | 165  | 158     | 161   | 153     |
| October   | .             | 195  | 188     | 192   | 186     | 149   | 136     | 171   | 166     | 165                                  | 159     | 162   | 154     | 163  | 156     | 157   | 152     |
| November  | .             | 191  | 186     | 190   | 186     | 149   | 135     | 172   | 166     | 166                                  | 160     | 162   | 155     | 163  | 158     | 159   | 153     |
| December  | .             | 193  | 187     | 190   | 186     | 149   | 134     | 175   | 167     | 167                                  | 160     | 162   | 154     | 164  | 156     | 159   | 154     |
| Averages  | .             | 193  | 187     | 192   | 186     | 150   | 138     | 173   | 168     | 165                                  | 160     | 163   | 155     | 164  | 157     | 160   | 153     |

TABLE No. 23.—Concluded — Elevation of the Hydraulic Grade Line, in Feet, above Boston City Base, etc.

| 1939<br>MONTH | SOUTHERN HIGH SERVICE              |         |  |         |                                 |         | NORTHERN HIGH SERVICE          |         |   |         |   |         | INTERMEDIATE<br>HIGH<br>SERVICE              |         | NORTHERN<br>EXTRA HIGH<br>SERVICE           |         |  |         |   |         |
|---------------|------------------------------------|---------|--|---------|---------------------------------|---------|--------------------------------|---------|---|---------|---|---------|--|---------|---|---------|--|---------|---|---------|
|               | BOSTON,<br>BOWDOIN<br>ENGINE HOUSE |         | MILTON,<br>ADAMS STREET<br>AT CANTON<br>AVENUE |         | QUINCY,<br>FORBES HILL<br>TOWER |         | QUINCY,<br>WATER WORKS<br>SHOP |         | SOMERVILLE,<br>BROADWAY<br>AT CEDAR ST. |         | REVERE,<br>WATER WORKS<br>SHOP,<br>BROADWAY |         | LYNN,<br>ENGINE<br>HOUSE,<br>UNION<br>SQUARE |         | WINTHROP,<br>TOWN HALL,<br>HERMAN<br>STREET |         | BELMONT,<br>COMMON ST.<br>AT<br>WASHINGTON<br>STREET |         | LEXINGTON,<br>MASSACHU-<br>SETTS AVE. AT<br>ARLINGTON<br>LINE |         |
|               | Maximum                            | Minimum | Maximum  | Minimum | Maximum                         | Minimum | Maximum                        | Minimum | Maximum                                 | Minimum | Maximum                                     | Maximum | Minimum                                      | Maximum | Minimum                                     | Maximum | Maximum  | Minimum | Maximum   | Minimum |
| January .     | 245                                | 226     | 246  | 225     | 245                             | 224     | 242                            | 219     | 260                                     | 237     | 263   | 251     | 262  | 229     | 198   | 182     | 324  | 303     | 432   | 422     |
| February .    | 245                                | 227     | 247  | 227     | 246                             | 222     | 239                            | 212     | 263                                     | 236     | 263   | 251     | 262  | 215     | 198   | 184     | 320  | 306     | 432   | 420     |
| March .       | 245                                | 212     | 247  | 221     | 245                             | 219     | 242                            | 215     | 263                                     | 240     | 263   | 253     | 262  | 250     | 198   | 194     | 320  | 308     | 432   | 420     |
| April .       | 245                                | 224     | 248  | 226     | 245                             | 225     | 245                            | 205     | 263                                     | 236     | 265   | 253     | 263  | 250     | 198   | 194     | 329  | 308     | 433   | 419     |
| May .         | 242                                | 224     | 248  | 226     | 245                             | 222     | 242                            | 214     | 263                                     | 236     | 265   | 248     | 263  | 245     | 198   | 182     | 320  | 308     | 432   | 408     |
| June .        | 241                                | 215     | 246  | 221     | 244                             | 215     | 238                            | 205     | 263                                     | 236     | 262   | 241     | 260  | 233     | 191   | 175     | 320  | 303     | 432   | 411     |
| July .        | 241                                | 212     | 246  | 211     | 244                             | 210     | 238                            | 193     | 263                                     | 221     | 260   | 230     | 259  | 215     | 194   | 165     | 322  | 307     | 432   | 399     |
| August .      | 240                                | 212     | 246  | 212     | 243                             | 210     | 237                            | 198     | 263                                     | 230     | 259   | 232     | 258  | 215     | 196   | 166     | 318  | 308     | 432   | 408     |
| September .   | 241                                | 205     | 247  | 223     | 245                             | 219     | 239                            | 207     | 263                                     | 236     | 262   | 244     | 259  | 238     | 197   | 184     | 318  | 308     | 434   | 413     |
| October .     | 242                                | 219     | 247  | 225     | 243                             | 223     | 238                            | 212     | 263                                     | 235     | 265   | 244     | 262  | 241     | 198   | 176     | 318  | 308     | 432   | 420     |
| November .    | 242                                | 221     | 247  | 226     | 245                             | 223     | 239                            | 212     | 263                                     | 233     | 265   | 248     | 261  | 247     | 198   | 182     | 318  | 308     | 433   | 422     |
| December .    | 241                                | 219     | 248  | 225     | 245                             | 222     | 241                            | 209     | 263                                     | 236     | 262   | 251     | 261  | 245     | 198   | 184     | 318  | 308     | 433   | 421     |
| Averages .    | 243                                | 218     | 247  | 222     | 245                             | 220     | 240                            | 208     | 263                                     | 234     | 263   | 246     | 261  | 235     | 197   | 181     | 320  | 307     | 432   | 415     |

APPENDIX No. 6

Information relating to areas, populations, local sewer connections and other data for the Metropolitan sewerage districts appears in the following table:

*North Metropolitan Sewerage District*

| Area<br>(Square<br>Miles) | Estimated<br>Total<br>Population | Miles of<br>Local Sewer<br>Connected | Estimated<br>Population<br>Contributing<br>Sewage | Ratio of<br>Contributing<br>Population<br>to Total<br>Population<br>Per Cent. | CONNECTIONS MADE<br>WITH METROPOLITAN<br>SEWERS |         |
|---------------------------|----------------------------------|--------------------------------------|---|---|---|---------|
|                           |                                  |                                      |   |   | Public  | Special |
| 101.49                    | 754,600                          | 1,056.44                             | 695,470   | 92.16   | 403   | 772     |

*South Metropolitan Sewerage District*

|        |         |          |         |       |     |    |
|--------|---------|----------|---------|-------|-----|----|
| 208.52 | 771,720 | 1,136.92 | 578,940 | 75.02 | 231 | 97 |
|--------|---------|----------|---------|-------|-----|----|

*Both Metropolitan Sewerage Districts*

|        |           |          |           |       |     |     |
|--------|-----------|----------|-----------|-------|-----|-----|
| 310.01 | 1,526,320 | 2,193.36 | 1,274,410 | 83.50 | 634 | 869 |
|--------|-----------|----------|-----------|-------|-----|-----|

Of the estimated gross population of 1,526,320 on December 31, 1939, 1,274,410, representing 83.50 per cent were on that date contributing sewage to the Metropolitan sewers, through a total length of 2193.36 miles of local sewers owned by the individual cities and towns of the districts.

These sewers are connected with the Metropolitan Systems by 634 public and 869 special connections. During the current year there has been an increase of 32.03 miles of local sewers connected with the Metropolitan Systems, and 5 public and 10 special connections have been added.



## NORTH METROPOLITAN SEWERAGE SYSTEM

*Location, Length and Sizes of Sewers, with Public and Special Connections*

| CITY OR TOWN           | SIZE OF SEWERS                       | Length in Miles     | Public Connections, December 31, 1939 | SPECIAL CONNECTIONS                                |                     |
|------------------------|--------------------------------------|---------------------|---------------------------------------|--|---------------------|
|                        |                                      |                     |                                       | Character or Location of Connections added in 1939 | Number in Operation |
| Boston:                |                                      |                     |                                       |  |                     |
| Deer Island            | 4'0" to 9'0" . . . .                 | 1.653               | 4                                     | - - - -  | 1                   |
| East Boston            | 9'0" to 1'0" . . . .                 | 5.467               | 25                                    | - - - -  | 3                   |
| Charlestown            | 6'7" x 7'5" to 1'0" . . . .          | 3.292               | 15                                    | - - - -  | 11                  |
| Winthrop .             | 9'0" . . . .                         | 2.864               | 14                                    | Marine Barracks, Navy Yard                         | 1                   |
| Chelsea .              | 11'3" x 11'3" to 15' . . . .         | 5.321               | 14                                    | - - - -  | 3                   |
| Everett .              | 11'3" x 11'3" to 4'8" x 5'1" . . . . | 3.728               | 10                                    | - - - -  | 9                   |
| Lexington <sup>1</sup> | 1'3" to 2'3" . . . .                 | .002                | 2                                     | - - - -  | 11                  |
| Malden .               | 4'6" x 4'10" to 1'0" . . . .         | 5.844 <sup>2</sup>  | 40                                    | - - - -  | 252 <sup>3</sup>    |
| Melrose .              | 4'6" x 4'10" to 10" . . . .          | 6.099 <sup>4</sup>  | 43                                    | Dwelling-house . . . .                             | 1                   |
| Cambridge .            | 5'2" x 5'9" to 1'3" . . . .          | 7.899               | 60                                    | Building . . . .                                   | 137 <sup>5</sup>    |
| Somerville .           | 6'5" x 7'2" to 10" . . . .           | 3.577               | 16                                    | - - - -  | 13                  |
| Medford .              | 9'3" x 9'3" to 10" . . . .           | 12.497              | 28                                    | - - - -  | 9                   |
| Winchester .           | 5'6" x 5'9" to 15" . . . .           | 13.496              | 39                                    | - - - -  | 21                  |
| Stoneham .             | 3'0" to 10" . . . .                  | 4.026               | 12                                    | Dwellings . . . .                                  | 34                  |
| Woburn .               | 4'2" x 4'5" to 15" . . . .           | 1.783               | 4                                     | - - - -  | 2                   |
| Arlington .            | 3'0" x 3'6" to 10" . . . .           | 6.723 <sup>6</sup>  | 67                                    | - - - -  | 6                   |
| Belmont .              | 1'3" to 2'6" . . . .                 | 0.008               | 5                                     | Dairy . . . .                                      | 254 <sup>7</sup>    |
| Wakefield .            | 3'0" to 2'0" x 2'3" . . . .          | 0.703               | 1                                     | Dwelling-house . . . .                             | 1                   |
| Revere .               | 4'0" to 15" . . . .                  | 0.136               | 3                                     | - - - -  | 1                   |
| Reading .              | 1'4" to 3'0" . . . .                 | 0.055               | 1                                     | - - - -  | -                   |
|                        |                                      | 85.173 <sup>8</sup> | 403                                   |  | 772                 |

<sup>1</sup> The Metropolitan Sewers extend but a few feet into the town of Lexington.

<sup>2</sup> Includes 1.84 miles of sewer purchased from the city of Malden.

<sup>3</sup> Mostly buildings connected with sewers formerly belonging to city of Malden but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 215 of the Acts of 1898 and by the Metropolitan Water and Sewerage Board in accordance with Chapter 512 of the Acts of 1911 and made parts of the North Metropolitan Sewerage System.

<sup>4</sup> Includes 0.736 of a mile of sewer purchased from the city of Melrose.

<sup>5</sup> Mostly buildings connected with a sewer formerly belonging to the city of Melrose but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 414 of the Acts of 1896 and with a sewer extension built in accordance with Chapter 436 of the Acts of 1897 by the Metropolitan Sewerage Commission as an outlet for part of the town of Stoneham and made parts of the North Metropolitan Sewerage System.

<sup>6</sup> Includes 2.631 miles of sewer purchased from the town of Arlington.

<sup>7</sup> Mostly buildings connected with a sewer formerly belonging to the town of Arlington but later purchased by the Metropolitan Sewerage Commission in accordance with Chapter 520 of the Acts of 1897 and made a part of the North Metropolitan Sewerage System.

<sup>8</sup> Includes 2.787 miles of Old Mystic Valley Sewer in Medford and Winchester, running parallel with the Metropolitan Sewer.

SOUTH METROPOLITAN SEWERAGE SYSTEM

Location, Length and Sizes of Sewers, with Public and Special Connections

| CITY OR TOWN             | SIZE OF SEWERS                     | Length in Miles    | Public Con-<br>nec-<br>tions, Decem-<br>ber 31, 1939 | SPECIAL CONNECTIONS   |   |   |   |                        |
|--------------------------|------------------------------------|--------------------|--|---|---|---|---|------------------------|
|                          |                                    |                    |  | Character or Location<br>of Connections<br>added in 1939        |   |   |   | Number in<br>Operation |
| Boston:                  |                                    |                    |  |   |   |   |   |                        |
| Back Bay .               | 6'6" to 3'9" . . . .               | 1.500 <sup>1</sup> | 17   | -   | - | - | - | 7                      |
| Brighton .               | 7'0" to 12" . . . .                | 6.405 <sup>2</sup> | 16   | -   | - | - | - | 7                      |
| Dorchester .             | 3' x 4' to 2'6" x 2'7" . . . .     | 2.870 <sup>3</sup> | 14   | -   | - | - | - | 9                      |
| Hyde Park .              | 10'7" x 11'7" to 30" pipe . . . .  | 4.543              | 20   | -   | - | - | - | 5                      |
| Roxbury .                | 6'6" x 7' to 4'0" . . . .          | 1.430              | -  | -   | - | - | - | -                      |
| WestRoxbury              | 9'3" x 10'2" to 12" . . . .        | 7.643              | 28   | -   | - | - | - | 15                     |
| Brookline .              | 6'6" x 7'0" to 8" . . . .          | 2.540 <sup>4</sup> | 14   | -   | - | - | - | 2                      |
| Dedham .                 | 4' x 4'1" to 2'9" x 3' . . . .     | 5.012              | 11   | -   | - | - | - | 3                      |
| Hull <sup>5</sup> .      | 60" pipe . . . .                   | 0.750              | -  | -   | - | - | - | -                      |
| Milton .                 | 11' x 12' to 8" . . . .            | 7.127              | 41   | -   | - | - | - | 4                      |
| Newton .                 | 5'3" x 5'6" to 1'3" . . . .        | 2.912              | 15   | -   | - | - | - | 17                     |
| Quincy .                 | 11'3" x 12'6" to 16" pipe . . . .  | 8.738              | 33   | -   | - | - | - | 2                      |
| Waltham .                | 3'6" x 4'0" . . . .                | 0.001              | 1  | -   | - | - | - | -                      |
| Watertown .              | 4'2" x 4'9" to 12" . . . .         | 0.750 <sup>6</sup> | 8  | -   | - | - | - | 6                      |
| Needham .                | 2'0" x 2'3" to 2'3" x 2'6" . . . . | 4.921              | 1  | -   | - | - | - | 9                      |
| Wellesley <sup>7</sup> . | 2'0" x 2'3" . . . .                | -                  | 1  | -   | - | - | - | -                      |
| Canton .                 | 4'6" x 5'0" to 20" . . . .         | 7.243              | 4  | Springdale Finishing Co.<br>Town Shed<br>Dwelling-house . . . . |   |   |   | 7                      |
| Norwood .                | 4'0" x 4'3" to 30" pipe . . . .    | 2.844              | 4  |   |   |   |   | 1                      |
| Stoughton <sup>7</sup> . | - - - -                            | -                  | 1  |   |   |   |   | 1                      |
| Walpole <sup>7</sup> .   | - - - -                            | -                  | 1  |   |   |   |   | 1                      |
| Braintree .              | 30" pipe . . . .                   | 0.071              | 1  | -   | - | - | - | -                      |
| Weymouth .               | 4'9" x 5'0" to 30" pipe . . . .    | 1.346              | -  | -   | - | - | - | -                      |
|                          |                                    | 68.646             | 231  |   |   |   |   | 97                     |

<sup>1</sup> Includes 0.355 of a mile of sewer purchased from the city of Boston.  
<sup>2</sup> Includes 0.446 of a mile of pipe and concrete sewers built for the use of the city of Boston; also 0.026 of a mile of sewer purchased from the town of Watertown.  
<sup>3</sup> Includes 1.24 miles of sewer purchased from the city of Boston.  
<sup>4</sup> Includes 0.158 of a mile of pipe sewer built for the use of the town of Brookline.  
<sup>5</sup> Hull is not a part of the Metropolitan Sewerage District.  
<sup>6</sup> Includes 0.025 of a mile of sewer purchased from the town of Watertown.  
<sup>7</sup> The Metropolitan Sewer extends but a few feet into the towns of Wellesley, Walpole, and Stoughton.

NORTH METROPOLITAN SEWERAGE SYSTEM

Table showing Cities and Towns delivering Sewage to this System; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas; Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

(Populations estimated as of December 31, 1939)

| CITIES AND TOWNS       | Miles of Local Sewers Connected | Separate or Combined            | Number of Connections with Local Sewers | Estimated Number of Persons Served by Each House Connection <sup>1</sup> | Estimated Population Now Contributing Sewage | Estimated Present Total Population | Estimated Area Now Contributing Sewage | Area Ultimately to Contribute to Sewage | Ratio of Contributing Population to Present Total Population |           | Ratio of Contributing Area to Ultimate Area |           |
|------------------------|---------------------------------|---------------------------------|---|--|--|------------------------------------|--|---|--|-----------|---|-----------|
|                        |                                 |                                 |   |  |  |                                    |  |   | Sq. Miles  | Per Cent. | Sq. Miles                                   | Per Cent. |
| Boston (Deer Island) . | 0.70                            | Separate . . . . .              | —                                       | —  | 800 <sup>2</sup>                             | 800 <sup>2</sup>                   | —                                      | —                                       | —  | —         | —   | —         |
| Winthrop . . . . .     | 34.04                           | Separate . . . . .              | 4,011                                   | 4.26   | 17,090                                       | 17,160                             | 1.44                                   | 1.61                                    | 99.59  | 89.44     | 1.61  | 89.44     |
| Boston (East Boston) . | 36.03                           | Separate and combined . . . . . | 5,569                                   | 11.40  | 63,490                                       | 67,150                             | 1.27                                   | 2.18                                    | 94.55  | 58.26     | 2.18  | 58.26     |
| Chelsea . . . . .      | 37.80                           | Separate and combined . . . . . | 4,582                                   | 8.49   | 38,900                                       | 39,350                             | 1.33                                   | 2.07                                    | 98.86  | 64.25     | 2.07  | 64.25     |
| Everett . . . . .      | 53.59                           | Separate and combined . . . . . | 7,271                                   | 6.29   | 45,730                                       | 45,980                             | 2.15                                   | 2.92                                    | 99.46  | 73.63     | 2.92  | 73.63     |
| Malden . . . . .       | 84.40                           | Separate . . . . .              | 9,790                                   | 5.72   | 56,100                                       | 56,480                             | 3.67                                   | 4.16                                    | 99.33  | 88.22     | 4.16  | 88.22     |
| Melrose . . . . .      | 37.30                           | Separate . . . . .              | 5,466                                   | 4.34   | 23,720                                       | 25,410                             | 2.43                                   | 3.81                                    | 93.35  | 63.78     | 3.81  | 63.78     |
| Boston (Charlestown) . | 22.25                           | Separate and combined . . . . . | 5,629                                   | 4.88   | 27,470                                       | 27,560                             | 0.67                                   | 1.27                                    | 99.67  | 52.76     | 1.27  | 52.76     |
| Cambridge . . . . .    | 159.38                          | Separate and combined . . . . . | 19,341                                  | 6.34   | 122,620                                      | 122,740                            | 5.33                                   | 5.43                                    | 99.90  | 98.16     | 5.43  | 98.16     |
| Somerville . . . . .   | 121.70                          | Separate and combined . . . . . | 18,557                                  | 5.24   | 97,240                                       | 97,460                             | 3.88                                   | 3.96                                    | 99.77  | 97.47     | 3.96  | 97.47     |
| Medford . . . . .      | 103.61                          | Separate . . . . .              | 11,103                                  | 5.57   | 61,840                                       | 63,260                             | 4.63                                   | 6.11                                    | 97.76  | 75.78     | 6.11  | 75.78     |
| Winchester . . . . .   | 46.66                           | Separate . . . . .              | 3,157                                   | 4.45   | 14,050                                       | 14,060                             | 2.17                                   | 5.31                                    | 99.93  | 40.87     | 5.31  | 40.87     |
| Woburn . . . . .       | 30.82                           | Separate . . . . .              | 2,096                                   | 5.47   | 11,470                                       | 19,970                             | 1.44                                   | 12.23                                   | 57.44  | 11.77     | 12.23                                       | 11.77     |
| Stoneham . . . . .     | 22.50                           | Separate . . . . .              | 1,732                                   | 4.79   | 8,300  | 11,660                             | 1.12                                   | 4.27                                    | 71.18  | 26.23     | 4.27  | 26.23     |
| Arlington . . . . .    | 76.97                           | Separate . . . . .              | 7,088                                   | 5.44   | 38,560                                       | 41,120                             | 3.29                                   | 4.73                                    | 93.77  | 69.34     | 4.73  | 69.34     |
| Belmont . . . . .      | 57.57                           | Separate . . . . .              | 4,012                                   | 5.70   | 22,870 <sup>3</sup>                          | 28,910 <sup>3</sup>                | 2.77                                   | 3.94                                    | 79.11  | 70.30     | 3.94  | 70.30     |
| Wakefield . . . . .    | 28.30                           | Separate . . . . .              | 1,879                                   | 4.76   | 8,940  | 16,680                             | 1.57                                   | 6.36                                    | 53.60  | 24.69     | 6.36  | 24.69     |
| Lexington . . . . .    | 18.60                           | Separate . . . . .              | 848                                     | 4.34   | 3,680  | 12,220                             | 0.98                                   | 15.98                                   | 30.11  | 6.13      | 15.98                                       | 6.13      |
| Revere . . . . .       | 52.57                           | Separate . . . . .              | 5,532                                   | 5.42   | 29,980                                       | 34,940                             | 2.60                                   | 5.55                                    | 85.80  | 46.85     | 5.55  | 46.85     |
| Reading . . . . .      | 11.65                           | Separate . . . . .              | 621                                     | 4.20   | 2,610  | 11,690                             | 0.55                                   | 9.76                                    | 22.33  | 5.63      | 9.76  | 5.63      |
| Totals . . . . .       | 1,056.44                        | — — — — —                       | 118,284                                 | 5.88   | 695,470                                      | 754,600                            | 43.29                                  | 101.65                                  | 92.16  | 42.59     | 101.65                                      | 42.59     |

<sup>1</sup> Estimated from Assessors' statement of the number of houses in each city or town on December 31, 1939 and the population from census of 1935.

<sup>2</sup> Estimated by Superintendent of the Institution on Deer Island.

<sup>3</sup> Including 2 connections with McLean Hospital, having an estimated population of 840.



## SOUTH METROPOLITAN SEWERAGE SYSTEM

*Table showing Cities and Towns delivering Sewage to this System; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas; Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.*

(Populations estimated as of December 31, 1939)

| CITIES AND TOWNS              | Miles of Local Sewers Connected | Separate or Combined  | Number of Connections with Local Sewers | Estimated Number of Persons Served by Each House Connection <sup>1</sup> | Estimated Population Now Contributing Sewage | Estimated Present Total Population | Estimated Area Now Contributing Sewage | Area Ultimately to Contribute to Sewage | Ratio of Contributing Population to Present Total Population | Ratio of Contributing Area to Ultimate Area |
|-------------------------------|---------------------------------|-----------------------|---|--|--|------------------------------------|--|---|--|---|
|                               |                                 |                       |   |  |  |                                    |  |   |  |   |
| Boston (Back Bay)             | 27.84                           | Separate and combined | 2,259                                   | 10.63  | 24,010                                       | 24,050                             | Sq. Miles                              | Sq. Miles                               | Per Cent.  | Per Cent.                                   |
| Boston (Brighton)             | 75.53                           | Separate and combined | 6,078                                   | 11.93  | 72,510                                       | 76,160                             | 3.46                                   | 3.74                                    | 99.84  | 72.67                                       |
| Brookline                     | 102.60                          | Separate and combined | 8,039                                   | 6.74   | 52,920                                       | 53,300                             | 4.79                                   | 5.35                                    | 95.21  | 92.51                                       |
| Newton                        | 199.53                          | Separate              | 14,148                                  | 4.40   | 62,250                                       | 67,040                             | 9.77                                   | 16.00                                   | 99.29  | 89.53                                       |
| Watertown                     | 64.25                           | Separate              | 6,224                                   | 5.90   | 36,720                                       | 36,800                             | 2.97                                   | 3.83                                    | 92.85  | 61.06                                       |
| Waltham                       | 66.86 <sup>6</sup>              | Separate              | 5,687                                   | 7.30   | 41,520 <sup>5</sup>                          | 44,850 <sup>5</sup>                | 3.07                                   | 11.40                                   | 99.78  | 77.55                                       |
| Boston (Dorchester)           | 75.27                           | Separate and combined | 8,512                                   | 8.45   | 71,930 <sup>2</sup>                          | 75,540 <sup>2</sup>                | 3.07                                   | 4.89                                    | 92.57  | 32.54                                       |
| Milton                        | 42.09                           | Separate and combined | 3,407                                   | 4.15   | 14,140 <sup>2</sup>                          | 19,960 <sup>2</sup>                | 1.75                                   | 9.59                                    | 95.22  | 62.78                                       |
| Boston (Hyde Park)            | 46.39                           | Separate              | 3,553                                   | 13.47  | 47,860                                       | 48,340                             | 2.04                                   | 4.57                                    | 70.84  | 18.25                                       |
| Dedham                        | 28.82                           | Separate              | 1,767                                   | 4.43   | 7,830  | 15,620                             | 1.33                                   | 9.66                                    | 99.01  | 44.64                                       |
| Boston (Roxbury) <sup>3</sup> | —                               | —                     | —                                       | —  | —  | 76,820 <sup>2</sup>                | —                                      | 1.23                                    | 50.13  | 13.77                                       |
| Boston (West Roxbury)         | 102.44                          | Separate and combined | 8,065                                   | 5.09   | 41,050 <sup>2,4</sup>                        | 41,850 <sup>2,4</sup>              | 3.95                                   | 8.92                                    | 98.09  | 44.28                                       |
| Quincy                        | 160.65                          | Separate              | 13,965                                  | 5.34   | 74,570                                       | 82,100                             | 6.13                                   | 11.46                                   | 90.83  | 53.49                                       |
| Wellesley                     | 49.66                           | Separate              | 2,093                                   | 4.03   | 8,430  | 15,410                             | 2.44                                   | 9.89                                    | 54.70  | 24.67                                       |
| Needham                       | 22.07                           | Separate              | 1,026                                   | 4.02   | 4,120  | 12,860                             | 0.92                                   | 11.44                                   | 32.04  | 8.04  |
| Canton                        | 3.69                            | Separate              | 339                                     | 4.82   | 1,630  | 7,230                              | 0.17                                   | 17.84                                   | 22.54  | 0.95  |
| Norwood                       | 34.98                           | Separate              | 2,315                                   | 5.89   | 13,640                                       | 16,130                             | 1.84                                   | 10.16                                   | 84.56  | 18.11                                       |
| Stoughton                     | 5.79                            | Separate              | 134                                     | 4.32   | 580  | 8,770                              | 0.07                                   | 16.23                                   | 6.61   | 0.43  |
| Walpole                       | 10.70                           | Separate              | 207 <sup>7</sup>                        | 4.46   | 920 <sup>7</sup>                             | 7,630                              | 0.42                                   | 20.81                                   | 12.06  | 2.02  |
| Braintree                     | 17.76                           | Separate              | 535                                     | 4.32   | 2,310  | 18,600                             | 0.86                                   | 13.44                                   | 12.42  | 6.40  |
| Weymouth                      | —                               | Separate              | —                                       | —  | —  | 22,660                             | —                                      | 16.46                                   | —  | —   |
| Totals                        | 1,136.92                        | —                     | 88,353                                  | 6.55   | 578,940                                      | 771,720                            | 50.86                                  | 208.52                                  | 75.02  | 24.34                                       |

<sup>1</sup> Estimated from Assessors' statement of the number of houses in each city or town on December 31, 1939 and the population from census of 1935.

<sup>2</sup> Parts of Dorchester, Milton, Roxbury and West Roxbury which are situated within the South Metropolitan Sewerage District limits are tributary at present to Boston main drainage works.

<sup>3</sup> At present connected with Boston main drainage system.

<sup>4</sup> Including connection with the Boston State Hospital, having an estimated population of 2,310.

<sup>5</sup> Including connections with the Metropolitan State Hospital and the Middlesex County Tuberculosis Hospital, authorized by Chapter 372 of the Acts of 1928 and chapter 373 of the Acts of 1929, having an estimated population of 2,911.

<sup>6</sup> Includes 3.65 miles of trunk sewer built by Waltham for the joint use of Waltham, Watertown, Metropolitan State Hospital, and Middlesex County Tuberculosis Hospital, authorized by Chapter 372 of the Acts of 1928 and Chapter 373 of the Acts of 1929.

<sup>7</sup> Includes 4 manufacturing plants.

BOTH METROPOLITAN SEWERAGE SYSTEMS

Table showing areas delivering Sewage to both Systems; Approximate Miles of Sewers connected; Estimated Populations and Areas now contributing; Total Areas ultimately to contribute, and Present Populations on Such Areas; Ratios of Present Contributing Areas to Ultimate Areas, and Ratios of Populations now contributing to Present Total Populations.

(Populations estimated as of December 31, 1939)

| SYSTEMS            | Miles of Local Sewers Connected | Separate or Combined  | Number of Connections with Local Sewers | Estimated Number of Persons Served by Each House Connection | Estimated Population Now Contributing Sewage | Estimated Present Total Population | Estimated Area Now Contributing Sewage | Area Ultimately to Contribute to Sewage | Ratio of Contributing Population to Present Total Population | Ratio of Contributing Area to Ultimate Area |
|--------------------|---------------------------------|-----------------------|---|---|--|------------------------------------|--|---|--|---|
| North Metropolitan | 1,056.44                        | Separate and combined | 118,284                                 | 5.88  | 695,470                                      | 754,600                            | Sq. Miles 43.29                        | Sq. Miles 101.65                        | Per Cent. 92.16  | Per Cent. 42.59                             |
| South Metropolitan | 1,136.92                        | Separate and combined | 88,353                                  | 6.55  | 578,940                                      | 771,720                            | Sq. Miles 50.86                        | Sq. Miles 208.52                        | Per Cent. 75.02  | Per Cent. 24.34                             |
| Totals . . .       | 2,193.36                        | - - -                 | 206,637                                 | 6.17  | 1,274,410                                    | 1,526,320                          | Sq. Miles 94.15                        | Sq. Miles 310.17                        | Per Cent. 83.50  | Per Cent. 30.54                             |





## APPENDIX No. 7

CONTRACTS MADE AND PENDING DURING  
*Contracts Relating to the*

| 1<br>Number<br>of<br>Contract | 2<br>WORK   | 3<br>Number<br>of<br>Bids | AMOUNT OF BID          |                           | 6<br>Contractor   |
|-------------------------------|---|---------------------------|------------------------|---------------------------|---|
|                               |   |                           | 4<br>Next to<br>Lowest | 5<br>Lowest               |   |
| 1 93 *                        | Section 106A in Medford   | 6                         | \$332,065.37           | \$318,157.84 <sup>1</sup> | Edward M. Matz, Inc.,<br>25 Zamora Street,<br>Jamaica Plain,<br>Mass.   |
| 2 94 <sup>2</sup>             | Force Main under Mystic<br>River in Medford.  | 7                         | 45,765.00              | 44,490.00 <sup>1</sup>    | Domenick Zanni, 22<br>Lakeview Avenue,<br>Reading, Mass.  |
| 3 95 *                        | Section 105 in Medford.   | 3                         | 835,574.39             | 694,523.90 <sup>1</sup>   | V. Barletta Co., 10<br>Whipple Avenue,<br>Roslindale, Mass.   |
| 4 91 <sup>2</sup>             | Furnishing and installing<br>two vertical tubular<br>boilers with corrugated<br>iron fire boxes at the<br>East Boston Pumping<br>Station, East Boston,<br>Mass. | 3                         | 12,650.00              | 11,884.00 <sup>1</sup>    | D. M. Dillon Steam<br>Boiler Works, Inc.,<br>Fitchburg, Mass.   |
| 5 96A *                       | Section 104B in Everett.  | 6                         | 537,905.34             | 515,821.99 <sup>1</sup>   | C. & R. Construction<br>Co., 75 Bradeen St.,<br>Roslindale, Mass.   |
| 6 96B * <sup>2</sup>          | Section 104A in Everett.  | 8                         | 229,704.65             | 184,978.68 <sup>1</sup>   | Edward M. Matz, Inc.,<br>101 Moraine Street,<br>Jamaica Plain, Mass.  |
| 7 97 & *<br>98<br>combined    | Sections 102 and 103,<br>combined, in Everett<br>and Chelsea.   | 5                         | 1,765,470.70           | 1,628,060.00 <sup>1</sup> | Silas Mason Co., Inc.,<br>500 Fifth Avenue,<br>New York, N. Y.  |
| 8 99 †                        | Section 101, Siphon under<br>Chelsea Creek, Chelsea<br>and Boston.  | 7                         | 732,053.52             | 608,538.18 <sup>1</sup>   | C. & R. Construction<br>Co., 75 Bradeen St.,<br>Roslindale, Mass.   |
| 9 99A † <sup>2</sup>          | Section 101, Preliminary<br>Excavation for Siphon<br>under Chelsea Creek.   | 3                         | 999.00                 | 930.00 <sup>1</sup>       | Edward M. Matz, Inc.,<br>101 Moraine Street,<br>Jamaica Plain, Mass.  |
| 10 101 † <sup>2</sup>         | Borings for Chelsea Creek<br>Siphon in Chelsea and<br>Boston.   | 2                         | 525.00                 | 494.60 <sup>1</sup>       | Raymond Concrete Pile<br>Co., 31 St. James<br>Ave., Boston, Mass.   |
| 11 102 <sup>2</sup>           | Furnishing, erecting and<br>repairing chain link<br>fences in Medford and<br>East Boston, Mass.   | 4                         | 1,425.12               | 1,184.80 <sup>1</sup>     | American Chain Link<br>Fence Co., Division<br>of American Spring<br>Bed Manufacturing<br>Co., Inc., 24 Ship<br>Ave., Medford, Mass. |

<sup>1</sup> Contract based upon this bid.

<sup>2</sup> Contract completed.

\*P.W.A. Project No. Mass. 1419F, D-201, North Metropolitan Relief Sewer.

†P.W.A. Project No. Mass. 1574F, D-204, North Metropolitan Relief Sewer.

APPENDIX No. 7

THE YEAR 1939—SEWERAGE DIVISION  
*North Metropolitan System*

| 7                | 8                          | 9   | 10                               |    |
|------------------|----------------------------|---|----------------------------------|----|
| Date of Contract | Date of Completion of Work | Prices of Principal Items of Contracts made in 1939                     | Value of Work done Dec. 31, 1939 |    |
| Oct. 20, 1938    | —                          | —   | \$315,276.85                     | 1  |
| Oct. 28, 1938    | Aug. 15, 1939              | —   | 66,654.86                        | 2  |
| Dec. 29, 1938    | —                          | —   | 632,891.90                       | 3  |
| Feb. 23, 1939    | Nov. 1, 1939               | Lump sum.   | 11,884.00                        | 4  |
| Mar. 2, 1939     | —                          | See Canvass of Bids.  | 314,893.49                       | 5  |
| Mar. 2, 1939     | Dec. 6, 1939               | See Canvass of Bids.  | 189,847.33                       | 6  |
| Mar. 16, 1939    | —                          | See Canvass of Bids.  | 1,059,158.75                     | 7  |
| April 6, 1939    | —                          | See Canvass of Bids.  | 354,111.28                       | 8  |
| Dec. 29, 1938    | Feb. 6, 1939               | Earth excavation, \$3.10 per cu. yd.                                    | 930.00                           | 9  |
| Jan. 26, 1939    | Mar. 2, 1939               | Earth borings, \$0.57 per lin. ft.; Water borings, \$1.048 per lin. ft. | 2,288.93                         | 10 |
| Oct. 5, 1939     | Nov. 8, 1939               | See Canvass of Bids.  | 1,149.75                         | 11 |

Total of 11 Contracts made and pending during the year, \$2,949,087.14







